DOCUMENT RESUME

ED 245 113 CE 039 146

AUTHOR Stubbs, Jean; And Others
TITLE A Model Development Project: ABE for Maintenance Personnel. Final Report.
INSTITUTION Allegheny County Community Coll., Pittsburgh, Pa.
SPONS AGENCY Pennsylvania State Dept. of Education, Harrisburg. Bureau of Vocational and Technical Education.
PUB DATE 15 Jun 84
NOTE 231p.; Parts of this document will not reproduce well due to light type.
PUB TYPE Reports - Descriptive (141) -- Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC10 Plus Postage.
DESCRIPTORS *Adult Basic Education; Basic Skills; *Communication Skills; Core Curriculum; Curriculum Development; *Custodian Training; Daily Living Skills; Educational Needs; Functional Reading; Independent Study; Instructional Materials; Learning Activities; *Mathematics Skills; Needs Assessment; *Problem Solving; Program Development; Program Effectiveness; Program Implementation; Questionnaires; *School Maintenance; School Surveys
IDENTIFIERS Community College of Allegheny County PA; *Custodians

ABSTRACT

A model program was designed to provide objective ways of measuring the academic and vocational needs of a maintenance and custodial work force and to develop a core curriculum based on the information obtained. To gather data, the researchers administered a needs assessment survey and conducted interviews of staff and management of the maintenance department of the Allegheny campus of the Community College of Allegheny County in Pennsylvania. Based on these data, a core curriculum focusing on basic problem solving, communication, and mathematics skills was developed. Classes met for two and one-half hour sessions twice weekly immediately following the work day. As a rule, classes consisted of a group lesson followed by individual work in an auto-tutorial lab. Although the follow-up questionnaire showed perceived improvement in work quality and self-image in just two cases, the developers felt that the interview and survey techniques, the sequence of meetings, the curriculum planning and format, and the subsequent classes were successful and thus merited further investigation and expansion. (Appendixes to this report, consisting of three-quarters of the document, include the interview questions, a written summary of the administrative survey, the skills survey and staff questionnaire, a problem-solving model, the project lesson packets, a student auto-tutorial journal, and a supervisor follow-up questionnaire.) (MN)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED245113

FINAL REPORT

A MODEL DEVELOPMENT PROJECT: ABE FOR MAINTENANCE PERSONNEL

Community College of Allegheny County
Allegheny Campus
808 Ridge Avenue
Pittsburgh, PA 15212
for
Pennsylvania Department of Education
Bureau of Vocational Education
Commonwealth of Pennsylvania
333 Market Street
P.O. Box 911
Harrisburg, PA 17108

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
L Tellers
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Jean Stubbs, Project Director
Linda Ehrlich and Lisa Tellers, Project Instructor/Coordinators
Community College of Allegheny County-Allegheny Campus

June 15, 1984
99-4014
$4283.00

Copies of this report are available from ERIC and ADVANCE

CE039146

"The activity or product which is the subject of this report or presentation was supported in whole or in part by the U.S. Office of Education and the Pennsylvania Department of Education. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education or the Pennsylvania Department of Education, and no official endorsement should be inferred."

TABLE OF CONTENTS

Abstract	II
Introduction	1
Chapter I	7
Chapter II	12
Conclusion	22
Appendices	27

A. Interview Questions

B. Written Summary of Administrative Interview

C. Skills Survey

D. Staff Questionnaire

E. Memo

F. Memo

G. Tally sheet: Written Summary of Administrative Interview

H. Tally sheet: Skills Survey

I. Tally sheet: Staff Questionnaire

J. Memo

K. Problem Solving Model

L. Learning Laboratory Materials
Classroom Texts and Materials

M. Lesson Packets
Problem Solving — Lessons 1 - 2
Communications — Lessons 1 - 8
Mathematics — Lessons 1 - 5

N. Student Auto-Tutorial Journal

O. Supervisor Follow-up Questionnaire

A limited number of copies of this report are available free of charge. Please contact Jean Stubbs, Community College of Allegheny County, Learning Center, 808 Ridge Avenue, Pittsburgh, PA 15212.

Abstract:

The purpose of this project was the development of a model program which would provide objective ways of measuring the academic and vocational needs of a maintenance/custodial work force, and the development of a core curriculum based upon information gathered. Surveys and interview questions were designed and administered to staff and management of the maintenance department at CCAC - Allegheny Campus. Forty hours of instruction were provided for interested staff members in the areas of mathematics and communications. All lesson plans were recorded and are included in the final report, as are surveys and questionnaires. The project is designed to be adapted for use at other colleges, businesses, and hospitals.

INTRODUCTION

A. Rationale

Because of increased technology, rapidly changing life styles and uncertainty in the job market, employees who have the opportunity to upgrade their general academic skills and their vocational knowledge are a more valuable asset to their employer and themselves. They tend to be more productive and project a better overall attitude in the work place. The question is no longer whether training should be available; rather, who can benefit most, what the focus will be, and how the training can best be provided.

In this project the who is the poorly educated person who has taken a low-paying job with few educational requirements and usually no educational benefits. Recent findings show that great strides have been made in on-the-job training programs and long-range educational planning for semi-skilled and skilled employees. For the unskilled laborer, however, this is not always the case. They continue on a "downward spiral with respect to education, and they become the hard core undereducated, taking up lifestyles and values that spawn new generations of undereducated."[1]

This is a complex problem, and one that no educational provider can solve alone. Successful linkage can help, however, and one that has proven beneficial is between college and industry.[2] The expertise a college staff can provide regarding course development and instructional methods can be of great help to industry.

[1]Taken from Proceeding of the Sixth Annual National Competency Based Adult Educational Invitational Conference, Boston: January 27-29, 1982, pp. 30.

[2]Ibid., p. 30-31.

To date, one of the methods of dealing with the adult in a low-paying job who needs to upgrade his/her basic skills was to advertise ABE/GED classes through adult learning centers operating from a variety of settings--community colleges, public schools, etc. Few programs have gone to the work-site, however. Therefore, the person who is often least equipped financially, emotionally, and practically to organize his life to attend classes in addition to normal responsibilities is expected to sacrifice the most, unlike higher paid, more skilled employees who have training programs brought to them. This project was designed to provide one model for rectifying this inequality.

The project followed guidelines that were determined effective in a survey of businesses presented in Teaching Basic Skills Through Industry. It was found that more than half of the successful training programs were delivered to employees through outside organizations. Of these, almost all had the following characteristics:

1. Focused on specific, job related skills
2. Delivered in short sections
3. Adaptable to work hours or after work delivery
4. Required minimum of staff supervision

It is these conditions which define the paramenters of a successful delivery system. Within the parameters, a training program that is both marketable and effective must recognize the particular characteristics and needs of the setting and the program participants. Thus, the development of a delivery system entails a process through which the educational institution and organization can develop a variable program for specific sites.[3]

[3]"Teaching Basic Skills Through Industry," Narrative of Grant 992007 PA State Dept. of Education, 1982, Introduction.

The uniqueness of this project, in addition to the population it served, is that as much time was spent developing the process and the products necessary to successful implementation as was spent on the content of instruction. The process was recorded, analyzed, and made generalizable for use in varied work settings. The interviews, letters and surveys designed from it would apply to other large educational institutions, to hospital settings, and to business organizations having a large custodial staff. An instructor could use them to adapt and expand the sample curriculum materials presented here and produce a custom designed curriculum.

B. Specific Background Information

This project was designed and implemented at Community College of Allegheny County, Allegheny Campus, through the Basic Skills program. Because this facility already has an active and diversified basic skills program, a number of resources and materials were available for coordinator/instructors to draw upon.

There are 65 employees of the custodial/maintenance department at CCAC, most of whom work from 8:00 a.m. to 4:00 p.m. Monday through Friday. Some part time people work 8:00 p.m. to midnight Monday through Friday. No work release time was available to employees, so sessions were scheduled for early evening, after the day shift and before the night shift.

At CCAC, custodial staff are responsible for housekeeping duties and maintenance staff deal with repairs and small construction projects. Instructor/Coordinators took the needs of both groups into consideration when designing curriculum.

The hierarchy of jobs within the department allows for some advancement from within, but such promotions are not frequent. Employees seldom see

tangible reward for good job performance. Negative attitudes toward work was seen as a problem by both the director and supervisor. Basic Skills classes were intended by management as an opportunity for staff to improve both self image and attitude, as well as academics.

C. Goals and Objectives

Goals. This proposal addressed the Pennsylvania Department of Education Staff Development Priority No. 5 regarding the establishment of a model Adult Basic Education linkage program as it relates to job training services. The target population was the custodial/maintenance staff at the Community College of Allegheny County-Allegheny Campus.

The goal of the project was the development of a model program designed to provide objective ways of assessing the academic and vocational needs of such a work force (with the ultimate goal of improved job performance and/or upward mobility within the vocation). With the information collected from interviews and surveys, a core curriculum for Adult Basic classes was developed in the areas of mathematics and communication. Communication includes both reading and English Skills. The emphasis for classroom instruction was to provide learning experiences directly related to job tasks.

The long range goal of this project is to develop far-reaching linkage capability with other academic and industrial agencies who might be in need of specialized training for custodial/maintenance personnel. These agencies would look to the CCAC Basic Skills staff for consultation in implementing a similar program.

Objectives.

1. To survey custodial/maintenance staff and custodial/maintenance administrators regarding present academic and vocational needs.

2. To survey custodial/maintenance staff and custodial/maintenance adminstrators regarding desirable goals for academic growth and improved job performance.

3. To develop an Adult Basic Education curriculum for custodial/maintenance staff of CCAC based on needs and goals determined by surveys.

4. To provide selected custodial/maintenance staff with ABE classes designed to:

a. improve basic skills in mathematics and communication.

b. increase job effectiveness through specific course content.

c. introduce affective strategies and problem-solving techniques for better job execution.

Because the same survey instruments and methods were used to achieve Objectives #1 and #2, they will be treated together in the following chapter. Likewise, because the development of the ABE curriculum and the provision and design of the classes were accomplished simultaneously, Objectives #3and #4 will be treated together in Chapter II.

D. Staff

Chief Administrator of the project was Jean Stubbs, Basic Skills Coordinator at CCAC. Administrative functions included direct supervision of the program instructor/coordinators and establishment of interdepartment liaisons at CCAC necessary for successful completion of the project. The administrator was also partly responsible for outreach efforts designed to promote the completed program to other agencies.

The instructor/coordinators--Linda Ehrlich and Lisa Tellers, Instructional Managers employed at the time of the project in the Basic Skills Center--were responsible for the step-by-step execution of the pilot program. They designed and administered all interviews and

questionnaires, compiled information and planned the subsequent curriculum, and conducted classes and follow-through evaluations.

They have worked with Jean Stubbs during and after the initial project to formalize outreach efforts and make duplication of the project possible at other work sites, both at other CCAC campuses and in the private sector.

E. Time Frame

	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Interview Questions, Skills Surveys, and Questionnaires developed	—									
Management interviews and Skills Surveys completed		—								
Project presented to Staff		—								
Staff Questionnaires distributed and collected		—	—							
Information analyzed			—							
Curriculum developed			—	—	—	—				
Classes run			—	—	—	—	—			
Post testing						—	—			
Post evaluation by supervisors							—			
Outreach to various organizations							—	—	—	
Preparation of Final Report								—	—	—

F. Availability

Copies of this final report have been submitted to ERIC and ADVANCE.

CHAPTER I

Surveys and Techniques

Objective 1.

To survey custodial/maintenance staff and custodial/maintenance administrators regarding present academic and vocational needs.

Objective 2.

To survey custodial/maintenance staff and custodial/maintenance adminstrators regarding desirable goals for academic growth and improved job performance.

A. Instruments

In addressing objectives 1 and 2 the following survey instruments were developed:

1. Interview Questions (Appendix A) are designed for use with custodial/maintenance administrators. Interviews were used to establish contacts with supervisors to obtain initial input concerning supervisors' perceptions of staff members' academic needs and problems in the workplace, and to clarify hiring and training methods for the instructor/coordinators. The interview technique allows supervisors maximum opportunity for observations not foreseen by the instructor/coordinators.

2. Written Summary of Administrative Interview (Appendix B) is a tally sheet for the purpose of recording interview responses.

3. Skills Survey (Appendix C) is a listing of mathematics, communication, and problem solving skills designed to be completed after reflection by custodial and maintenance supervisors. Each skill is rated on a three choice scale: need to know, should know, and not relevant.

4. Staff Questionnaire (Appendix D) is designed to assess the staff members' perceptions of their academic achievement and job training. A large section contains a listing of a variety of academic and problem solving skills. Staff are asked to circle those they wish to study. Items pertaining to scheduling needs are included as are questions pertinent of formal education and training.

B. Procedures

Objectives one and two were addressed using this combination of interview and written surveys. Custodial/maintenance staff were alerted that the project was officially under way with a memo (Appendix E) from instructor/coordinators requesting an interview. These interviews were scheduled at supervisors' convenience in their offices. Interview Questions and the Skills Survey were designed. Six supervisors and the Union Steward were personally interviewed, and the responses to questions were recorded. The Skills Survey was distributed to each individual interviewed with a cover memo (see Appendix F), and these were completed and returned to the instructor/coordinators at a later date.

The Staff Questionnaire was designed. Meetings between an instructor/coordinator and groups of staff members were scheduled in conjunction with regular staff meetings when possible. These meetings would be the official introduction of the project to the staff, although the idea had been discussed informally with some staff members previously. Three meetings in all were held at which an instructor/coordinator presented the proposed program to the group and distributed the Staff Questionnaires to all staff members present, including those who expressed no interest in attending the classes. Questionnaires needed to be thoroughly explained and read

through so that responses were as complete and meaningful as possible. A few staff members took exception to the assumption that they needed instruction, and indicated that if job-related instruction is needed, release time should be provided. Also, the request for personal information on the top of the Questionnaires, such as, for addresses and social security numbers, aroused suspicion. The active participation of an enthusiastic supervisor was helpful at these times. The handling of such negative behavior would have been somewhat easier at smaller meetings. Also, the availability of release time would have exhibited confidence and commitment on the part of the employer. But despite some negative feedback, the majority of the questionnaires were returned by the end of the meetings. All three groups of staff persons--day custodial, night custodial, and maintenance personnel--were contacted and surveyed.

Instructor/coordinators compiled the responses to Administrative Interviews, Skills Surveys, and Staff Questionnaires and a profile of academic and personal needs and goals was extracted.

C. Findings

Tally sheets of Administrative Interviews, Skills Surveys, and Staff Questionnaires are included in Appendices G, H, and I.

In the academic skill area certain specific concerns surfaced in all three survey instruments. Measurement skills were frequently cited as a need or interest by many. Understanding and giving written and spoken directions, reading a diagram, table, or map, and speaking and writing clearly and correctly were named. Supervisors felt that familarity with whole number math, with handling money, and with reading

and understanding a job description were important for staff members. Staff members expressed a desire to work with fractions and decimals and to build vocabulary and pronunciation skills.

The problem of low morale among staff members was cited on all three instruments in a number of ways. Administrators expressed concern with "lack of motivation" and "lack of initiative" and, similarly, many staff members indicated "developing a positive attitude towards work" as a problem needing to be addressed. Staff members also were interested in learning to communicate their feelings effectively. Administrators named "accepting responsibility", "solving problems systematically", and "accepting supervision" as problems they observed among staff members.

D. Recruitment and Enrollment

Recruitment of staff members to attend the classes formally began at the staff meetings when the instructor/coordinators presented the proposed program to the staff. Questionnaires distributed at that time included a question regarding each person's interest in the classes. When the results of the Questionnaires were compiled, the names, addresses and phone numbers of persons who indicated a definite or possible interest were collected. A starting date and time was fixed for the first session, and these individuals received a letter (Appendix J) inviting them to sign up for the first class. After one week, however, although 11 had indicated a definite interest in the classes and 20 had indicated a possible interest, only two persons had committed themselves. Instructor/coordinators then telephoned every individual to whom a letter had been sent in order to determine the cause of the reluctance to participate. A big factor preventing many staff members from attending was unwillingness

or inability to spend more time away from the family and home. For others, a second job made participation impossible. But for five other individuals, the telephone call appeared to be enough to tip the balance and encourage them to attend the first class. In addition, three other individuals who were friends of staff members expressed interest and were permitted to attend since there were adequate places in the class.

Recruitment continued informally after classes began. Encouraged by reports from fellow employees, two additional employees enrolled in the third session. Occasionally, friends and relatives of class members participated in the classes.

By the end of the sessions six members of the custodial/maintenance staff, or 10% of the total number of employees, were still actively participating. In two cases participants dropped out because their high skill levels were not being challenged by class work. Two of the three students who were friends of staff members completed the course. As a final tally, twelve persons officially enrolled in the class and eight persons completed this course of instruction. These numbers do not include drop-in guests.

Chapter II

Curriculum Design and Class Format

Objective 3.

To develop an Adult Basic Education curriculum for custodial/maintenance staff of CCAC based on needs and goals determined by surveys.

Objective 4.

To provide selected custodial/maintenance staff with ABE classes designed to:

a. improve basic skills in math, reading and English.

b. increase job effectiveness through specific course content.

c. introduce affective strategies and problem-solving techniques for better job execution.

A. Rational for Curriculum Design

The instructor/coordinators of this project were responsible for curriculum design. They drew heavily on their backgrounds and interests in the development of thinking in adults as applied to curriculum content, and the actual planning process that developed between them as planners. Logistics dictated that the areas of mathematics and communications instruction be delegated to each instructor separately, but lesson planning was often done jointly, students' progress was continually discussed, and ideas were freely exchanged.

The "common thread" for the curriculum was the goal of exposing students to as many problem solving experiences as possible. A joint lesson was presented early in the class sessions outlining a five step process, and subsequent mathematics and communications lessons included

the model whenever possible.

Although the findings of the survey instruments were used to guide curriculum development, additional lessons emerged as classes progressed, and as the instructors realized that supervisors and staff are not always equipped to diagnose learning needs. For example, during the initial lesson on giving and following directions it became apparent that students were not visualizing what they read. A lesson dealing with visualizing as a related skill was designed following that session.

Throughout the curriculum design process there was concern for development and encouragement of thinking skills that would allow students to apply what they learned in class to situations on the job and elsewhere. The emphasis was never on the transfer of a large body of facts.

B. Curriculum Design and Format

The following steps were implemented in order to design the curriculum for the forty hours of classroom instruction:

1) The Administrative Interview, Skills Surveys, and Staff Questionnaires were analyzed and overall areas for curriculum development were chosen based upon identified need. The areas were:

Mathematics

Review of Basic Operations
Fractions
- as used in measurement
Surface and Area Measurement
Measurement Conversion
Decimals

Communications

Reading Comprehension
- giving and following directions
Sentence Structure & Writing
- spelling
- punctuation
Map Reading

A third area, Problem Solving, was identified as a need in relation to academics, job performance, and attitude. Therefore, problem solving strategies were included in all phases of curriculum development. A particular problem solving strategy (See Appendix K) was adopted for use throughout the course. This strategy was applied to different learning experiences.

2) Project instructor/coordinators surveyed several texts and materials presently in use with adult basic skills classes and chose the following core textbooks:

Life Skills Math by Donn Mosenfelder, Educational Design, Inc. 47 W. 13th Street, New York, NY 10111

Life Skills Math 2 Exercise Supplement by Donn Mosenfelder, Educational Design, Inc., 47 W. 13th Street, New York, NY 100

Grammar and Usage by Lee C. Deighton, Harcourt Brace Jovanovich, Inc., 757 Third Avenue, New York, NY 10017

The criteria for selection were based on direct applicability of material presented to the work setting, appropriate sequence of material, inclusion of topics from employee surveys, and an academic level deemed appropriate for the class make-up. Some of the particular advantages of the texts were:

Life Skills Math 2

- work with decimals is provided in relation to money concepts
- fractions are presented in conjunction with measurement
- there are job related practical applications for surface, liquid and metric measurement.

- concepts are presented in one or two pages with a great deal of variety. The instructors felt they could use these short bursts of material as introduction and expand the lessons with additional materials.

- material is presented clearly and layout is attractive.

- the accompanying exercise supplement allows for individual student acceleration or serves as extra practice.

Grammar and Usage

- gives straightforward treatment of traditional grammar, using standard terminology.

- each concept being presented is thoroughly covered and ample follow-up exercise are provided. Answers to exercises are in the back of the book allowing students to move at their own pace.

Writing lessons were generated by the instructor, and reading skills practice was provided through the Auto-tutorial Lab. The Auto-tutorial lab is a component of the CCAC Library. Included in it are basic skills books, tapes, filmstrips, and other types of materials designed to be used independently, as well as the equipment needed to use them.

As lesson planning progressed, it became apparent that ancillary instructional materials would be needed as well. A complete list of materials referred to in all lesson plans and used for independent learning laboratory assignments can be found in Appendix L.

3) The following lesson plan format was decided upon to allow for consistent reporting of lessons regardless of subject matter. A separate sheet was filled out for each lesson.

SUBJECT: _____ LESSON TITLE _____ LESSON NUMBER___

Objectives	Procedures	Materials

Objectives were numbered consecutively (1, 2, 3) while procedures and materials were numbered 1.1, 1.2, etc. as long as they belonged with objective number 1. When a second objective was introduced (number 2), procedure and materials then used numbers 2.1, 2.2, 2.3 etc.

4) The above steps provided subject areas and a format for reporting the curriculum. The class members were pre-tested with the following instruments:

Brigance Inventory of Essential Skills Computational Skills Form Grade Placement	Curriculum Assoc., Inc. 5 Esquire Road North Billerica, MA 01862
Test of Adult Basic Education Reading Level D 1970 Edition Form 3	CTB/McGraw Hill Del Monte Research Park Monterey, CA 93940
Gilmore Oral Reading Test Grades 1 - 8	Harcourt Brace Jovanovich, Inc. 757 3rd Avenue New York, NY 10017

Once the testing was complete specific lessons were developed. (See Appendix M for the lesson packets.)

5) Classes were conducted and alternate forms of the above tests were used for post testing.

C. Class Format

The class met for 2 1/2 hours sessions twice weekly immediately following the work day. As a general rule mathematics and communications were taught separately with one instructor. Occasionally both instructors came to a class for "special activities", for example, when the problem solving model was introduced, or when it was deemed necessary to have an extra person to provide individual help, and for the final class and party.

The usual format for each class session was a group lesson and then individual work in the Auto-tutorial lab. If punctuality was a problem, this format was reversed so that each person could begin working as soon as he/she arrived.

One of the most valuable structures that developed after the class had begun was the small group sharing that followed large group instruction. It was not uncommon to see more advanced students helping others complete class assignments and interpret homework. The helpers did not see this as a waste of time, and the persons being helped did not appear to resent assistance from peers.

The format within lessons was, by design, varied. The instructors made a conscious effort to combine teaching/learning strategies to stimulate interest, insight, and mastery of material. Examinations of individual lessons in Appendix M will yield examples of the following teaching strategies:

- lecture
- discussion
- teacher developed overhead projector materials
- brain storming sessions
- inductive and deductive instruction
- games as teaching tools
- small group work sessions

Auto-tutorial assignments were made on forms and given to the student (Appendix N). The student would obtain the materials from the technicians and set them up independently. Assistance was provided if needed. The instructor monitored the students on a rotating basis and gave help when necessary.

D. Considerations for Curriculum

As the curriculum emerged, it became apparent that certain impressions could be recorded about curriculum design as it relates to this particular custodial/maintenance population. Following are some ideas to consider when planning a course for a similar population:

1. Respondents to a call for such a class will vary greatly in entry level academic standing. Open ended planning and timing are needed to accommodate individual need.
2. A combination of large group and individualized instruction is important for continued student success and motivation. This allows some students to move ahead and others to practice concepts taught. Large group instruction should not be

under-estimated, however, as a stimulus to group cohesion, verbal interaction, and mutual problem solving.

3. Course content must be presented in a way that students are encouraged to develop thinking abilities as well as academic skills.

4. "Hands on" material will be necessary to the understanding of job-related skills. It is also helpful to base lessons on materials used "on the job." Examples of these are:

   a) use building floor plans for a lesson on finding perimeter and area

   b) use job description for vocabulary building

   c) use project assignment sheets for following written directions

   d) use product labels for following direction, math lessons on measurement conversion, and for related problem solving activities.

   e) use staff evaluation forms and hypothetical job performance situations to teach group problem solving around affective issues.

   f) draw on the job-related experiences of the employees to plan future lessons. If class members are assigned to a dry wall installation lessons can be built around this "real-life" situation.

   g) have students draw upon on-the-job responsibilities to develop skill in systematically giving directions.

5. The instructor/coordinators of the project continue to have a strong commitment to problem-solving experiences within the curriculum. They found, however, somewhat contrary to the "rules" of andragogy that class members exhibited a very traditional attitude toward learning. They seemed to prefer

extended drill sessions and saw less familiar problem-solving tasks as distractions rather than primary learning activities.

Students often asked for extra homework so they could practice concepts the instructors knew they had mastered. Students also tended to view instructors in a traditional manner. It was difficult to instill the idea of teacher and student as "partners in learning."

The coordinators drew from the basic precepts of the andragogical process for their planning as well. It was accepted that adults bring to the learning situation a set of "givens" which allow them to benefit most when the educational setting allows for:

1) a way to learn directly from experience
2) a process of re-education that can reduce social conflicts through interpersonal activity in learning groups
3) a process of self-directed learning from which the adult can continually reassess his own learning needs as they emerge from the demands of the changing situation.

From these precepts the following instructional methods were identified:

1) The opportunity to learn should come by doing and practicing.
2) The goal of the method should be identified as the acquisition of problem solving skills--that is, learning must be problem centered.
3) The method should provide the learner with constant knowledge of his progress.

4) The method should provide measures by which results can be evaluated through objective and observable criteria.[4]

[4]Michael J. Auscin, Professionals and Paraprofessionals, Human Sciences Press: New York, 1978, pp. 97-102.

CONCLUSION

Summary

This project was not designed to be a scientific study; rather, it was formulated to document an effective process for providing adult basic education classes to a unique population. Effective, in these terms, meant workable, sound procedurally, and replicible. It is the developers' opinion that the interview and survey techniques, the sequence of meetings, the curriculum planning and format, and the subsequent classes were successful and merit further investigation and expansion.

The Supervisor Follow-up Questionnaire (See Appendix O) showed perceived improvement in quality of work and self-image in just two cases, but also yielded the information that other persons taking the classes were already doing a good job but were always looking toward self-improvement. In a subsequent interview a supervisor indicated he felt positive about the project because the work-place had seen fit to offer something extra for employees already doing a good job. This proved to be an ancillary benefit of the project that had not been anticipated, and an excellent reason for offering the classes to employees.

It is hoped that professionals reading this document will acknowledge the need for work-related basic education classes for populations similar to the custodial/maintenance personnel dealt with here. Once this acknowledgment is forthcoming, the procedures outlined for implementing such a program should prove helpful.

Recommendations

As a result of working on this project--taking into consideration the professional experiences of the coordinators with adult learners and program

development--the following recommendations are being made to those interested in replicating the project. Call these "hindsight" impressions, if you will.

1. When first contacting staff, consider the potential attitude of "Who are you to decide I need this?" This could be avoided by involving selected staff members at the onset of planning.
2. The active participation of custodial/maintenance director and on-line supervisors is crucial. Do not proceed with project if this support is not forthcoming. These persons can be the best recruiters and must understand the details of the project and support them. Another crucial person is the union representative. He/She should be included in planning and implementation.
3. As regards staff meetings, it was felt that contact with smaller groups of persons would have eliminated negative influence of a few. The questionnaire proved somewhat threatening and would have been better received had it been "read through" at meetings.
4. It is important to consider the possibility of release time for classes. This shows the confidence of the employer in the project and allows potential class members to attend more readily. A great many training programs for white collar employees operate this way.
5. There was, on occasion, a need felt on the part of the coordinators for a counseling component to the program. Certain personal and/or vocational problems emerged with a few students that were not easily dealt with within the parameters of the teacher-student relationship.
6. There were more under-employed custodial/maintenance personnel than had been anticipated. This changed the projected make-up of the class and the curriculum as well. There was more of an academic emphasis as well as an academic-vocational thrust to the material presented. One

might avoid this by setting a maximum grade level for admittance to class.

7. Because of the positive nature of supervisor involvement, it would be possible to change this project to include supervisors as classroom teachers. This would necessitate an extensive training program at the supervisory level, but might prove beneficial to long-term staff-supervisor relationships.

8. Although many unsatisfactory work-related issues were raised in the classroom--uneven work load between day and night shift, lack of consistency in supervisory styles, etc.--there was no real mechanism to communicate these concerns in a non-judgmental way to supervisory personnel, or to facilitate their resolution. One must be prepared to hear these issues and either deal with them through pre-arranged methods or indicate to students that the classroom is not the appropriate place for such issues.

The coordinators of the project had in mind the long-range goal of linkages within and beyond the community college setting when this project was conceived. They have taken and recommend the following steps for continuation and/or expansion of the project's scope:

1. Initial outreach can be sought through the Labor Studies Department at the college. At CCAC this department sometimes designs training courses in technical areas for maintenance personnel. The possibility would exist for a program in basic academic skills preceding or in conjunction with these classes. At the present time these classes are offered as part of the vocational training curriculum to persons interested in becoming maintenance personnel. The new thrust would be to upgrade skills of those already employed at the college.

Should no Labor Studies department exist, the Continuing Education Department could serve as the mechanism for offering these classes.

3. Extended outreach can be explored through other colleges and industries, the idea being to replicate the model at these different settings. This could be accomplished most easily in the academic setting because of availability of materials, etc. but a large employer might be willing to pay college staff as advisors and teachers to conduct the project at the work site.

As a way of contacting industry, it is recommended that the local affiliate of the National Executive Housekeeping Association (NEHA) be contacted. This is an organization made up of management personnel from custodial/maintenance departments of colleges, hospitals and businesses. From the authors' perspective these personnel were very receptive to the concept of basic skills instruction for maintenance staff and reported that since ongoing training is mandated in some cases, a program such as this would serve an administrative need. This is particularly pertinent to hospitals, where virtually every employee receives instruction and training except maintenance/custodial staff. Others program could be of mutual benefit to employer and employee.

It seems fitting to close this narrative with some quotes from the students involved in this project; if they perceived it as successful then, indeed, it was:

> "I feel I have gained a lot of knowledge from the class...[it helped me] in building my vocabulary and it helped me speak clearly...it helped me making decisions and helped me figure out mathematics problems..."

> "It was a great refresher class in math and English. It's a great

motivation for someone who has been out of school for a period of time."

"I'm glad I had the opportunity to take part in the class...This class is my introduction back into the world of education. I am grateful that I was reminded how important continuing to grow really is. I hope others will have a chance to be reminded too!"

APPENDICES

Appendix A

INTERVIEW QUESTIONS

1. (a) How many employees do you supervise?
   (b) How long have you worked here?

2. Describe briefly the duties of the persons you supervise.

3. What are your methods of supervision?
   (a) Daily work order system
      Do you have daily contact with staff?
   (b) Evaluation of performance
      Does staff know if they are performing adequately?

4. (a) What is your role in initial staff training?
   (b) What is your opinion of the training provided?

5. Are you involved in hiring employees?
   (a) Are there any specific qualifications?
   (b) If you had your choice, what qualifications would you look for when hiring?

6. Are there any ways for moving ahead in the job hierarchy here?

7. Can you identify any problems related to job performance in the following areas:
   (a) supervision - supervised relations
   (b) attitude problems among staff
   (c) difficulty in doing job adequately
   (d) any other concerns

8. How do you perceive the people you supervise in the areas of basic communications and mathematics.

9. What academic skills are needed to perform duties adequately?

10. What would you like to see your people be better at?

Appendix B

WRITTEN SUMMARY OF ADMINISTRATIVE INTERVIEW

Name_____ Length of Employment_____

Job Title_____

Date of Interview _____

Number of Persons Supervised:_____

Duties of Job:

Academic Skills Needed:

Training Methods:

Ongoing Supervision:

Hiring Qualifications:

Desirable Job Qualifications:

Appendix B

Problem areas:

Supervision:

Attitude:

Competence

On the Job:

Academic Readiness:

Other:

Suggestions for Improvement:

Appendix C

SKILLS SURVEY

Name_____ Date_____

The following is a list of skills which might be useful to maintenance and custodial workers. We ask that you consider each in light of the employees you supervise, and place an X in the appropriate column.

___ 1. (MUST KNOW) - skills a maintenance or custodial worker should know now and which should be included in this program.

___ 2. (SHOULD KNOW) - skills maintenance and costodial workers should know eventually and might be included in this or future programs.

___ 3. (NOT RELEVANT) - skills which maintenance and custodial workers do not need.

	MUST KNOW	SHOULD KNOW	NOT RELEVANT
PART I. Mathematics			
1. Computation: Adding, Subtracting, Multiplying and Dividing -			
whole numbers	_____	____	_____
fractions	_____	____	_____
decimals	_____	____	_____
2. Measurement:			
reading a ruler or tape measure	_____	____	_____
reading scales and gauges (water meters, pressure gauges)	_____	____	_____
calculating surface measure (how many square yards of carpet are needed to cover this floor? how much paint for this wall? how many liters in a gallon?)	_____	____	_____
3. Estimating - making an educated guess (about how many hours to wash the windows? about how much window cleaner will be needed)	_____	____	_____
4. Reading a table (postal rates)	_____	____	_____
map (drawings of campus, floor plans of buildings)	_____	____	_____
diagram (how is this assembled?)	_____	____	_____

Skills which might be useful to maintenance and custodial workers. (con't)

	MUST KNOW	SHOULD KNOW	NOT RELEVANT
5. Dealing with money (calculating your pay)	_____	_____	_____
designing a budget	_____	_____	_____
6. Word problems (applying the math to the situation)	_____	_____	_____

Can you think of any other math related subjects or problems which you would like to see included in a training program? If so, list them here.

_____

_____

_____

_____

	MUST KNOW	SHOULD KNOW	NOT RELEVANT
PART II. Communications			
1. Clear oral communication			
giving directions	_____	_____	_____
presenting a personal view	_____	_____	_____
following oral directions	_____	_____	_____
2. Clear written communication			
writing directions and description (accident reports, damage reports)	_____	_____	_____
writing personal letters	_____	_____	_____
writing business letters	_____	_____	_____
spelling	_____	_____	_____
punctuation	_____	_____	_____

Appendix C

Communications (con't)

	MUST KNOW	SHOULD KNOW	NOT RELEVANT
3. Reading Skills			
using reference materials (looking up information in a dictionary, instruction manual)	_____	_____	_____
reading and following directions (packing labels, warnings)	_____	_____	_____
interpreting visual aids (understanding diagrams, signs)	_____	_____	_____
understanding job related vocabulary	_____	_____	_____
4. Reading Comprehension (understanding what you read)			
making decisions from what you read	_____	_____	_____
reading job descriptions	_____	_____	_____

Are there any special vocabulary words needed on the job for the maintenance and custodial staff? If so, please list them.

_____

_____

_____

Can you think of any other reading or English skills which you would like to see included in a training program? If so , list them here.

_____

_____

_____

PART III. Problem solving skills	MUST KNOW	SHOULD KNOW	NOT RELEVANT
1. Communicating feelings to others	_____	_____	_____
2. Accepting responsibility for one's actions	_____	_____	_____
3. Acting independently; taking initiative	_____	_____	_____

Appendix C

Problem solving skills (con't)	MUST KNOW	SHOULD KNOW	NOT RELEVANT
4. Solving problems systematically	_____	_____	_____
5. Developing a positive attitude towards work	_____	_____	_____
6. Thinking in an organized manner	_____	_____	_____
7. Accepting supervision	_____	_____	_____
8. Making decisions	_____	_____	_____

Can you think of any other problem solving skills you would like to see included in a training program. If so, list them here.

_____

_____

_____

_____

_____

Appendix D

Staff Questionnaire

Name:_____ Building:_____

Address:_____

_____

Phone No._____ Social Security No._____

Job Title_____ Age____

Supervisor's Name_____ Today's Date_____

How long have you worked at CCAC?_____

What are your working hours? (Time & Days)_____

Family Status: Married____ Single___
No. of Children___

Circle the last grade you completed in school.

1 2 3 4 5 6 7 8 9 10 11 12 GED

Have you taken any courses at CCAC or elsewhere?
If so, please list:

_____

_____

_____

List any outside interests, hobbies_____

_____

Please rate the following aspects of your job:

		Too Much	Just Right	Not Enough
I.	1. Training to begin the job	_____	_____	_____
	2. Ongoing training	_____	_____	_____
	3. Supervision of Staff	_____	_____	_____
	4. Staff Communication	_____	_____	_____
	5. Staff Friendliness	_____	_____	_____
	6. Level of responsibility on the job	_____	_____	_____
	7. Level of difficulty on the job	_____	_____	_____

Appendix D

	Too Much	Just Right	Not Enough
8. Amount of work to be done	_____	_____	_____
9. Opportunity of advancement	_____	_____	_____
10. Evaluation of how you perform your job	_____	_____	_____

II. Think about the mathematics, reading and English you need to do your job. Rate your present level in these three areas:

	Too Much	Just Right	Not Enough
Mathematics	_____	_____	_____
Reading	_____	_____	_____
English	_____	_____	_____

If you had the opportunity to take a class, please circle the things you would like to know more about.

Mathematics

WHOLE NUMBERS	FRACTIONS	DECIMALS
Addition	Addition	Addition
Subtraction	Subtraction	Subtraction
Multiplication	Multiplication	Multiplication
Division	Division	Division

Measurement

Using a ruler

Finding the Area

Working with weights

Reading tables, Maps, Diagrams

Dealing with Money

Other: _____

Appendix D

Please circle the things you would like to know more about. (con't)

Communciations

Speaking Clearly - making your point

Writing Clearly - getting your thoughts across

Following Spoken Directions

Following Written Directions

Understanding What you heard

Building Vocabulary

Pronouncing words you read correctly

Spelling

Punctuation

Other: _____

Problem Solving

Communicating feelings to others

Accepting responsibility for one's actions

Acting independently; taking initiative

Developing a positive attitude toward work

Thinking in an organized manner

Accepting supervision

Making decisions

Other: _____

Please make a brief statement about your future goals in the areas of:

Employment_____

_____

_____

Education_____

_____

_____

Appendix D

Are you interested in attending the Basic Skills class that will be offered?

Yes, definitely _____

Maybe _____

No_____

If yes or maybe, indicate the time you would prefer. (Classes will meet for two sessions a week, three hours each session. The class will run for 10 weeks.

late afternoon (after day shift)_____

Evening_____

Combination of one (1) afternoon & Saturday_____
(1) evening & Saturday_____

Please give any other information you feel would be helpful to us in planning this course:

_____

_____

_____

_____

_____

_____

_____

Appendix E

M E M O

TO: Maintenance and Custodial Supervisor Personnel and Union Steward

Robert Hamilton
Anthony Di Caprio
Duvall A. Aiken
Willie Dailey
John K. Smith
Frank Hightower
William Miller
Charles Foreman

FROM: Linda Ehrlich and Lisa Tellers

DATE: August 25, 1983

Employees with the opportunity to upgrade academic skills reward both their employers and themselves. We are pleased that the Pennsylvania Department of Education has funded a special demonstration project here at CCAC entitled "A Model Developmental Project: ABE for Maintenance Personnel." We will be conducting Adult Basic Education Classes, beginning in October, free of charge, for interested maintenance and custodial personnel. We are in the process of planning the classes now. We ask that you help us in determining the academic skills in the areas of mathematics and communications (English and reading) most relevant to the tasks these workers perform.

We would like to collect your views through a personal interview and a written survey. Our secretary at the Learning Center will be calling you to schedule an interview of about 1/2 hour in length at your convenience. The survey will follow.

We appreciate that your time is valuable and hope you will be able to help us with this effort in designing a worthwhile course of study for these employees.

MEMO

TO: Maintenance and Custodial Personnel

Anthony Dicaprio
Willie Dailey
John Smith
Frank Hightower
William Miller
Charles Foreman

FROM: Linda Ehrlich and Lisa Tellers

DATE: September 15, 1983

SUBJECT: Skills Survey

As we indicated when we spoke with you, here is the Skills Survey we would like you to fill out. It will give us an even better idea of what to include in our curriculum.

We sincerely appreciate the time you spent talking with us. Your input and ideas were on target and helpful. We ask for your continued support when we publicize the classes to the total staff.

Please feel free to use the back of the enclosed form to submit in writing any additional ideas or concerns we may not have covered in the interview or survey. Please return the Survey by mail as soon as possible to Tellers or Ehrlich in L404.

Once again, thanks for your cooperation.

Appendix G

WTITTEN SUMMARY OF ADMINISTRATIVE INTERVIEW

Name_____ Length of Employment_____

Job Title_____

Date of Interview _____

Number of Persons Supervised:_____

Duties of Job:

Academic Skills Needed:

Basic Math - ratio
simple geometry
liquid measurement

Communications - reading directions
understanding spoken directions
writing legibly
reference materials (union contract)

Math for payroll
Better spoken English

Training Methods:

- person to person "buddy system"
- seminars with vendors - do actual teaching of procedures

Ongoing Supervision:

- day to day visiting
- 6 month formal evaluation
- done by project
- hierarchy maintenance
- listens for complaint and then corrects a person
- always ask, "never demand"

Hiring Qualifications:

- 8th grade education
- Experience
- Family man
- Dependability
- Proximity
- Own a home

Desirable Job Qualifications:

Appendix C

Problem areas:

Supervision:

- favoritism and jealousy
- some immediate supervisors do not do evaluate
- feels ratings are too high

Attitude:

- general motivation
- people do minimum work
- some almost openly defiant
- for some people "its only a job"
- problems between day and night shift
- problems between custodial/ maintenance re: prestige
- instructors and student ignoring "No Smoking " signs
- lack of initiative
- limited advancement opportunities cause depression
- staff complains among themselves people should feel free to come into his office
- lack of pride in job

Competence

On the Job:

- unwillingness to perform
- sloppy work
- 1/3 don't work up to expectations

Academic Readiness:

- feel most operate at a low level, but not absolutely necessary to job
- poor measuring skills cause waste
- maintenance low level causes problems with finer points of job

Other:

- need to know what motivates others
- keeping order between projects
- taking pride
- campus relations

Suggestions for Improvement:

- if course could be provided that would lead to advancement
- improved communication between shifts
- housekeeping job should be dignified
- instituting a formal training program

Appendix H

Tally Sheet
SKILLS SURVEY

Name_____ Date_____

The following is a list of skills which might be useful to maintenance and custodial workers. We ask that you consider each in light of the employees you supervise, and place an X in the appropriate column.

___ 1. (MUST KNOW) - skills a maintenance or custodial worker should know now and which should be included in this program.

___ 2. (SHOULD KNOW) - skills maintenance and costodial workers should know eventually and might be included in this or future programs.

___ 3. (NOT RELEVANT) - skills which maintenance and custodial workers do not need.

	MUST KNOW	SHOULD KNOW	NOT RELEVANT
PART I. Mathematics			
1. Computation: Adding, Subtracting, Multiplying and Dividing -			
whole numbers	5	1	
fractions	2	2	1
decimals	2	2	1
2. Measurement:			
reading a ruler or tape measure	4	2	
reading scales and gauges (water meters, pressure gauges)	1	1	2
calculating surface measure (how many square yards of carpet are needed to cover this floor? how much paint for this wall? how many liters in a gallon?)	1	3	1
3. Estimating - making an educated guess (about how many hours to wash the windows? about how much window cleaner will be needed)	2	4	
4. Reading a table (postal rates)		3	2
map (drawings of campus, floor plans of buildings)	1	3	1
diagram (how is this assembled?)	3		1

Skills which might be useful to maintenance and custodial workers. (con't)

	MUST KNOW	SHOULD KNOW	NOT RELEVANT
5. Dealing with money (calculating your pay)	4	2	
designing a budget		1	4
6. Word problems (applying the math to the situation)	1	3	

Can you think of any other math related subjects or problems which you would like to see included in a training program? If so, list them here.

Word problems good for maintenance workers

	MUST KNOW	SHOULD KNOW	NOT RELEVANT
PART II. Communications			
1. Clear oral communication			
giving directions	4	2	
presenting a personal view	2	3	
following oral directions	6		
2. Clear written communication			
writing directions and description (accident reports, damage reports)	3	2	
writing personal letters	3	1	2
writing business letters		4	2
spelling	3	3	
punctuation	2	4	

Appendix H

Communications (con't)

	MUST KNOW	SHOULD KNOW	NOT RELEVANT
3. Reading Skills			
using reference materials (looking up information in a dictionary, instruction manual)	2	3	1
reading and following directions (packing labels, warnings)	5	1	
interpreting visual aids (understanding diagrams, signs)	4	2	
understanding job related vocabulary	4	1	
4. Reading Comprehension (understanding what you read)			
making decisions from what you read	4	2	
reading job descriptions	5	1	

Are there any special vocabulary words needed on the job for the maintenance and custodial staff? If so, please list them.

Good communication skills - special vocabulary picked up on job

Can you think of any other reading or English skills which you would like to see included in a training program? If so , list them here.

PART III. Problem solving skills	MUST KNOW	SHOULD KNOW	NOT RELEVANT
1. Communicating feelings to others	2	4	
2. Accepting responsibility for one's actions	5	1	
3. Acting independently; taking initiative	3	3	

Appendix H

Problem solving skills (con't)	MUST KNOW	SHOULD KNOW	NOT RELEVANT
4. Solving problems systematically	3	2	1
5. Developing a positive attitude towards work	2	3	
6. Thinking in an organized manner	3	3	
7. Accepting supervision	6		
8. Making decisions	1	5	

Can you think of any other problem solving skills you would like to see included in a training program. If so, list them here.

All of above are good

Appendix I

Tally Sheet
Staff Questionnaire

Name: _____ Building: _____

Address: _____

_____

Phone No. _____ Social Security No. _____

Age ____

Job Title _____ Today's Date _____

Supervisor's Name _____

How long have you worked at CCAC? _____

What are your working hours? (Time & Days) _____

Family Status: Married ____ Single ___
No. of Children ___

Circle the last grade you completed in school.

1	2	3	4	5	6	7	8	9	10	11	12	GED	14
							1	1	5	3	26	2	1

Have you taken any courses at CCAC or elsewhere?
If so, please list:

_____

_____

_____

List any outside interests, hobbies _____

_____

Please rate the following aspects of your job:

		Too Much	Just Right	Not Enough
I.	1. Training to begin the job	1	26	18
	2. Ongoing training		25	15
	3. Supervision of Staff	11	25	4
	4. Staff Communication	1	22	16
	5. Staff Friendliness	2	27	13
	6. Level of responsibility or the job	2	31	5
	7. Level of difficulty on the job	4	26	8

	Too Much	Just Right	Not Enough
8. Amount of work to be done	11	28	2
9. Opportunity of advancement		11	29
10. Evaluation of how you perform your job	6	29	1

II. Think about the mathematics, reading and English you need to do your job. Rate your present level in these three areas:

	Too Much	Just Right	Not Enough
Mathematics	5	20	18
Reading	5	24	14
English	5	24	14

If you had the opportunity to take a class, please circle the things you would like to know more about.

Mathematics

WHOLE NUMBERS - 6	FRACTIONS - 8	DECIMALS - 9
Addition - 2	Addition - 3	Addition - 2
Subtraction - 1	Subtraction - 3	Subtraction - 1
Multiplication - 3	Multiplication - 5	Multiplication - 5
Division - 9	Division - 6	Division - 6

Measurement

Using a ruler - 6

Finding the Area - 7

Working with weights - 10

Reading tables, Maps, Diagrams - 19

Dealing with Money - 7

Other: Algebra, Percentage, First Aid, Reading Comprehension, Metric

Appendix I

Please circle the things you would like to know more about. (con't)

Communciations

Speaking Clearly - making your point - 16

Writing Clearly - getting your thoughts across - 24

Following Spoken Directions - 1

Following Written Directions - 7

Understanding What you heard - 5

Building Vocabulary - 23

Pronouncing words you read correctly - 15

Spelling - 19

Punctuation - 10

Other: Speed reading _____

Problem Solving

Communicating feelings to others - 8

Accepting responsibility for one's actions - 4

Acting independently; taking initiative - 5

Developing a positive attitude toward work - 10

Thinking in an organized manner - 4

Accepting supervision - 5

Making decisions - 5

Other: _____

Please make a brief statement about your future goals in the areas of:

Employment _____

_____

_____

Education _____

_____

_____

Are you interested in attending the Basic Skills class that will be offered?

Yes, definitely ___11___

Maybe ___20___

No ___12___

If yes or maybe, indicate the time you would prefer. (Classes will meet for two sessions a week, three hours each session. The class will run for 10 weeks.

late afternoon (after day shift) ___15___

Evening ___10___

Combination of one (1) afternoon & Saturday ___9___
(1) evening & Saturday ___5___

Please give any other information you feel would be helpful to us in planning this course:

_____

_____

_____

_____

_____

_____

_____

ALLEGHENY CAMPUS
808 RIDGE AVENUE
PITTSBURGH, PA. 15212

COMMUNITY COLLEGE
OF
ALLEGHENY COUNTY

TO: _____

FROM: Linda Ehrlich
Lisa Tellers

RE: Academic Skills Development Class

DATE: October 7, 1983

Thank you for your interest in the Academic Skills Development class.

The class will be meeting every Monday from 4:45 to 7:30 beginning October 24th. We will meet in the Learning Center, L-404. We hope you have made a definite decision to join us. The additional three class hours will be scheduled after our first meeting.

Please register for the class by calling Darlene Cooper at ext. 2761 no later than Tuesday, October 18th. (You're welcome to stop by and tell her if you'd like.)

P. S. Feel free to bring a sandwich to class to eat during the break.

Appendix K

Problem Solving Model

a. FACT FINDING--examine the situation from different perspectives.

b. PROBLEM FINDING--state the problem as it is perceived.

c. IDEA FINDING--brainstorm a variety of ways to solve the problem.

d. SOLUTION FINDING--choose one or more of the various ideas to see which best satisfies the situation. This is where modification takes place to assure that the requirements outlined by the original problem are satisfied.

e. ACCEPTANCE FINDING--better known as implementation, the solution is applied and then evaluated for its effectiveness.

adapted from Creative Problem Solving in Mathematics

by Ruth B. Noller, et al.,
Buffalo, NY, 1978.
D.O.K. Publishers, Inc.

Appendix L

Learning Laboratory Materials

Mathematics

Understanding Essentials of Mathematics
Mastering Fractions
Brunswick Productions

Mini-Courses In Mathematics
Educulture Tutorial Systems
3184 "J" Airway Avenue
Casta Mesa, CA 92626

Your Future Is Now Series
Pennsylvania Department of Education
Box 911
Harrisburg, PA 17126

Individualized Mathematics Program
Edits
San Diego, CA 92107

Fundamentals of Arithmetic - A Mixed-Media Program
Harper and Row, Publishers, Inc.
10 E. 53rd Street
New York, NY 10022

Communications

Graded Reading Materials

S. R. A. Reading Laboratory 3a, IVa
Donald H. Parker
Science Research Associates, Inc.
Chicago 1973, 1959

Specific Skill Series Booklets A-J
Richard A. Bonine
Barnell, Loft, Ltd.
Baldwin, NY 1977
Titles: Working with Sounds
Following Directions
Using the Context
Locating the Answer
Getting the Facts
Getting the Main Idea
Drawing Conclusions
Detecting the Sequence

Essential Skills Series Booklets 1-20
Walter Pauk, PhD.
Jamestown Publisher 1976

Appendix L

Punctuation and Spelling Materials

Language 300 Series
Lessons for Self Instruction in the Basic Skills
Martin Doyle, EdD, and Eileen Lothamer, PhD.
CTB/McGraw-Hill
Del Monte Research Park
Monterey, CA 93940
1979

Titles: Spelling
Punctuation
Capitalization

Michigan Programmed Spelling Series/Use Frequency Based Words
Enid L. Guelsberg, EdS.
Ann Arbor Publishers

Appendix L
Classroom Texts and Materials

Mathematics

Intuitive Math Series
Innovative Sciences, Inc
300 Broad Street
Stamford, CT 06901

Mathematics for Today - Blue and Red Level
Oxford Book Company
11 Park Place
New York, NY 10007

Arithmetic Skills Workbook
Ansco School Publications, Inc.
315 Hudson Street
New York, NY 10013

Fraction Discs
Milton Bradley Company
Springfield, MA 01101

Problem Solving Skills in Math - Grade 4-5, Grade 6-8
The Instructor Publications, Inc
Dansville, NY 14437

Communications - Resource Materials

An Inventory of Piaget's Developmental Tasks
Hans Furth
Center for Research in Thinking and Languate
Department of Psychology; Catholic University
Washington, DC 20017

Tactics in Reading I
Scott, Foresman & Company, 1961

Breaking the Reading Barrier
Doris Wilcox Gilbert
Prentice-Hall
Englewood Cliffs, NJ 1959

Games Magazine
January 1983

Life Skills Reading 2 Comprehension Skills
Carol Mullins
Educational Design, Inc.
New York 1981

Building Basic Skills in Reading
Contemporary Books, Inc.
Chicago 1982

Appendix L

Creating Contexts/A Practical Approach to Writing
Domenick Caruso and Stephen Weidenborner
W. W. Norton and Company, Inc.
New York 1977

Attribute Logic Blocks
Invicta Plastics Ltd.
Oadby, England 1977

The Random House Dictionary
Jess Stein, ed.
Ballantine Books
New York 1980

Grammar and Usage
Lee C. Dieghton
Harcourt, Brace, Jovanovich
New York 1979

Appendix M

Lesson Packets

PROBLEM SOLVING

SUBJECT: Problem Solving LESSON TITLE: Problem Solving Model LESSON NUMBER: 1

Objectives	Procedures	Materials
1. To introduce and provide practice in using a model for problem solving which can be applied to academic and practical situations.	1.1 Introduce, discuss the model; solve the problem given as an example on the handout, using an overhead of a grid of 25 squares. Use suggestions from the group to determine how to keep track of the square. Be sure the concept of brainstorming is understood. Emphasize the need to avoid unconsciously setting limits where none exist.	1.1 Overhead projector 1.1 Transparency of 5 x 5 grid of squares. 1.1 Handout of problem solving model including incomplete example
	1.2 Work with the group to solve the problem involving drawing described figures and fitting them into the prescribed shape. Scissors should be nearby and obviously available.	1.2 Handout of problem to solve involving drawing specified shapes and fitting them into another figure 1.2 Scissors
	1.3 Discuss the on-the-job problem.	1.3 Handout of on-the-job problems.

H-1

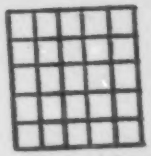
SUBJECT: Problem Solving LESSON TITLE: Problem Solving Model LESSON NUMBER: 1 (Con't.)

Objectives	Procedures	Materials
	the model.	
	1.4 Assign Dot-to-Dot as optional homework.	1.4 Homework handout-- Dot-to-Dot problem
2. To provide reading practice in the lab.	2.1 Remainder oftime is spent in the lab working on reading assignments	2.1 Lab Materials

5 STEPS FOR PROBLEM SOLVING

BEGIN BY READING THE PROBLEM

HOW MANY SQUARES DO YOU SEE IN THE FOLLOWING FIGURE?



STEP 1. FACT FINDING

EXAMINE THE PROBLEM FROM ALL POSSIBLE ANGLES.

FACTS SEEM RATHER MEAGER HERE...JUST THE PICTURE ..!..BUT WHAT IS A SQUARE?

STEP 2. PROBLEM FINDING

STATE WHAT THE PROBLEM MIGHT BE

WE MUST COUNT THE SQUARES WE SEE IN THE PICTURE. EXACTLY WHAT DOES THAT MEAN?

WHICH SQUARES?

DO YOU SEE JUST 25 OR MORE?

LOOK AGAIN.

ASK YOURSELF: WHAT IS THE BIGGEST SQUARE?

WHAT IS THE SMALLEST SQUARE?

ARE THERE IN-BETWEEN SIZED SQUARES?

WHAT ARE THEY?

WE MUST COUNT ALL THE SQUARES OF ALL SIZES IN THE SKETCH. YOU MAY REALIZE NOW THAT IF YOU HAD 25 FOR AN ANSWER AT THE BEGINNING THAT YOU MARRIED IN ON THE PROBLEM TOO SOON. IN FACT WE MIGHT GO STILL FURTHER TO DETERMINE OTHER PROBLEM INTERPRETATIONS. BUT LET'S GO ON.

STEP 3. IDEA FINDING

BRAINSTORM FOR A VARIETY OF WAYS TO SOLVE THE PROBLEM.

BASED ON THE NEW DATA ...THAT THERE ARE MORE THAN 25 SQUARES...

1. BE SYSTEMATIC AND COUNT 1 x 1, 2 x 2, 3 x 3 AND SO ON.
2. KEEP A CHART OF THE NUMBERS.
3. PUT A PIN IN EACH SQUARE TO KEEP TRACK OF THE NUMBER.
4. BE METHODICAL...COUNT ACROSS AND UP.
5. CUT OUT A SQUARE OF EACH SIZE...AND GLIDE IT AROUND THE SKETCH...TO HELP KEEP COUNT.
6. IMAGINE YOU HAVE MADE THE CUTOUT SQUARE...AND ARE SLIDING IT AROUND.

STEP 4. SOLUTION FINDING

CHOOSE ON OR MORE OF THE VARIOUS IDEAS TO SEE WHICH SATISFIES THE SITUATION.

CHOOSE A METHOD TO FILL IN THE FOLLOWING TABLE

Length of side	Size of square	Number of such squares
1	1x1	25
2	2x2	
3	3x3	
4	4x4	
5	5x5	

STEP 5. ACCEPTANCE FINDING

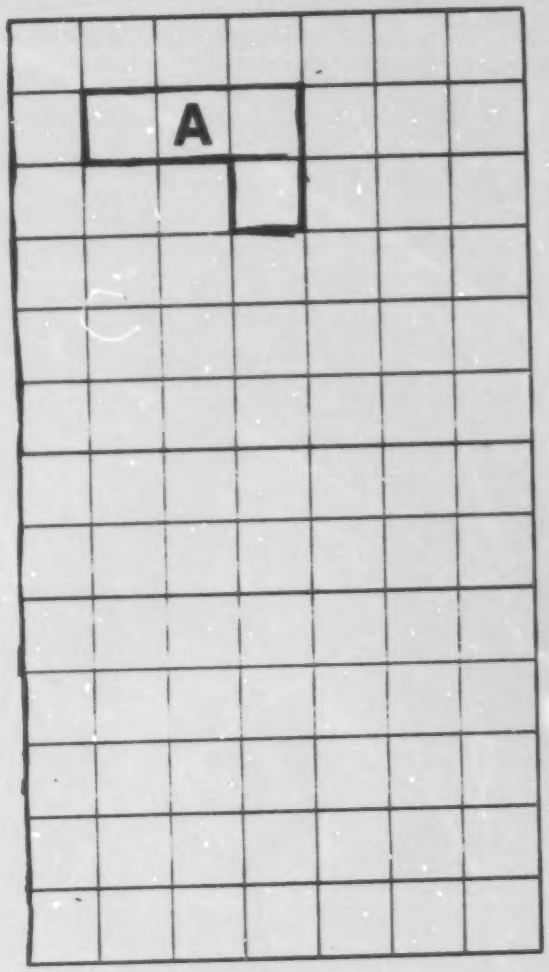
APPLY THE SOLUTION AND EVALUATE IT. DID IT WORK?

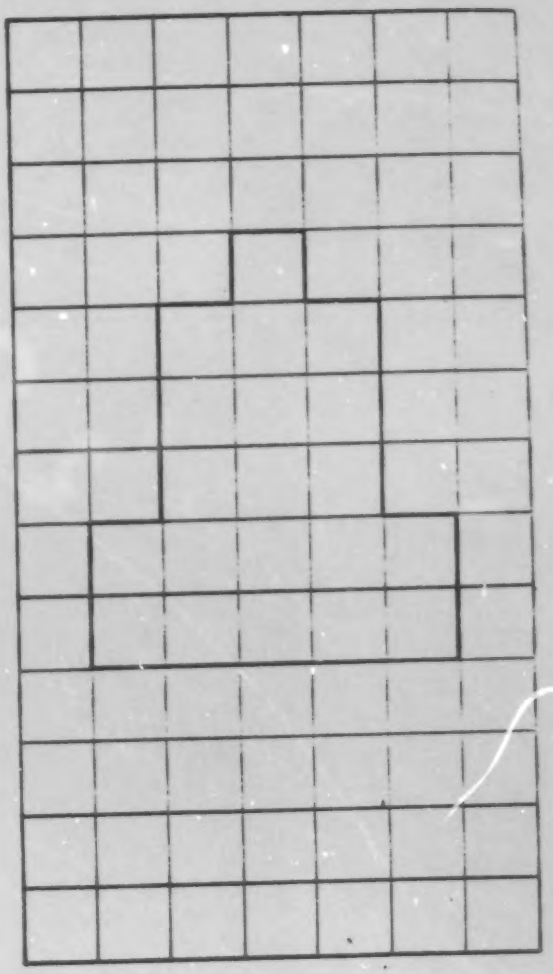
ARE YOU SATISFIED THAT YOU HAVE COUNTED THE SQUARES CORRECTLY? COULD YOU CONVINCE ANYONE ELSE THAT YOU HAVE SOLVED THE PROBLEM?

1.2

The diagram "A" shown on the first grid is formed by using 4 squares
Each square must have at least one side in common with another square.
You can make **four other** arrangements using 4 squares.

Do this on the first grid. Then use all five arrangements
to form the tower shown on the other grid.





1.3

SITUATION:

You have just won dinner for two and tickets to a movie of your choice from the local radio station. They have been awarded for this Friday night.

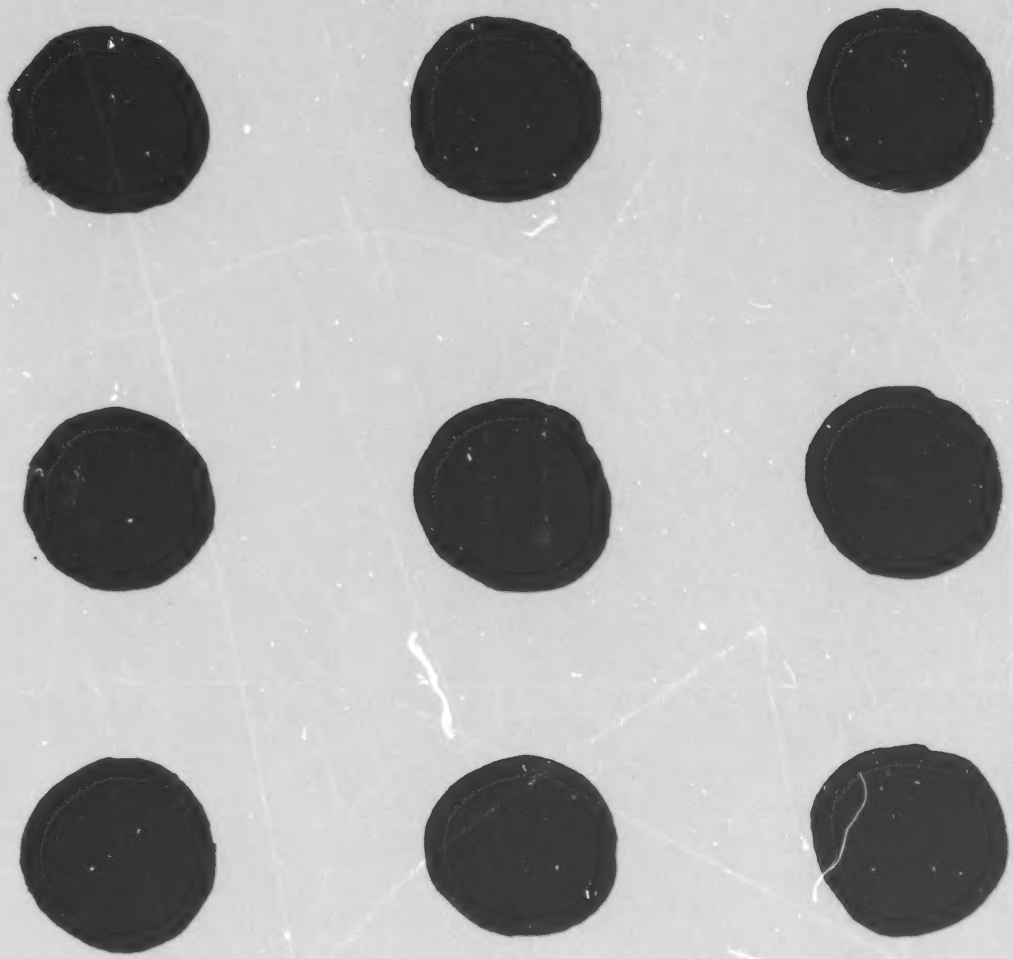
The situation is that you are scheduled to work from 6:00 p.m. to midnight and have no personal or vacation days left for the year.

In your excitement you have told several of your co-workers about your good fortune so taking a sick day would be difficult.

WHAT IS THE SOLUTION?

1.4

DOT-TO-DOT



Draw no more than four straight lines (without lifting the pencil from the paper) which will cross through all nine dots.

SUBJECT: Problem Solving LESSON TITLE: Fact Finding - Step I to Problem Solving LESSON NUMBER: 2

Objectives	Procedures	Materials
1. To isolate the Fact Finding step in the five step problem solving model as an important and necessary skill to develop.	1.1 Refer to chart of Problem Solving Model and discuss real-life situations where gathering all the facts before making a decision is crucial--on the job, at home, etc.	1.1 Problem Solving Model Chart (See Problem Solving Lesson 1, 1.1
2. To analyze the content of math word problems and identifing facts needed to answer a specific question. Also, to indicate whether too many or too few facts are given	2.1 Use book lesson as focus of discussion. a. Build on problem #3 p. 70 and relate to work. Get class input regarding how decisions are made about how much cleaning solution to take on job, etc. b. Review finding area and comparing to dimentions on bottle	2.2 Exercise 47 in Life Skill Math

SUBJECT: Problem Solving

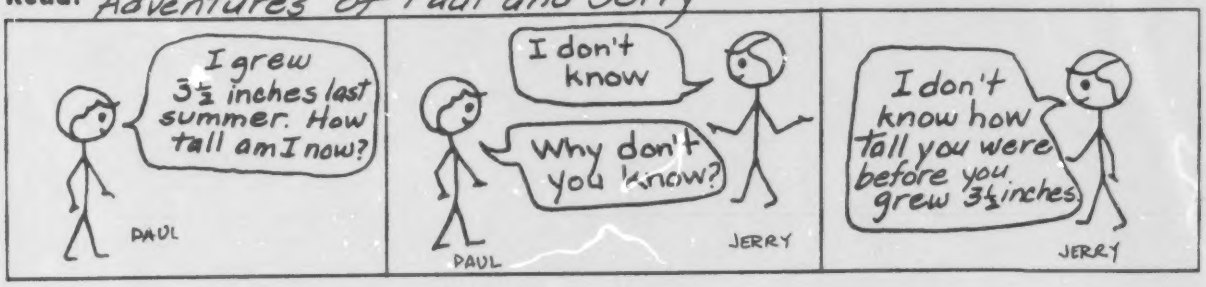
LESSON TITLE: Fact Finding - Step I to Problem Solving

LESSON NUMBER: 2 (Con't.)

Objectives	Procedures	Materials
	feet."	
	c. Provide independent practice with identifying facts in word problems.	2.2 c. Life Exercise Supplement #47. Loose sheets from Practice in Problem Solving Skills - Book A pp. 19 & 20, Book C p. 2.

Too Few Facts? Name _____

Read: *Adventures of Paul and Jerry*



Think:
Jerry was correct. He could not answer Paul's question until he knew how tall Paul used to be.

Before you try to solve a problem, be sure that enough facts are given.

A. Read each problem carefully. Notice that one fact is missing in each problem. Write the fact that you must know before you can solve the problem. (Do not solve the problem.)

1. Sarah spent 40¢ for jelly beans. How much change did she get? _____

2. When should Philip leave home in order to be in the dentist's office by 4:15 P.M.? _____

3. John's team is practicing for the baseball playoffs. They plan to practice 2 hours every day. How many hours will they practice before the playoffs begin? _____

4. Peggy made 3 batches of cookies to send to her brother at college. How many cookies did she send him? _____

5. John noticed that his car was nearly out of gasoline. He knew it would take about 16 gallons to fill the tank. Will the gasoline he needs cost more than $5? _____

6. Mr. Cord knows that it takes 1½ tiles for each square foot of floor to be tiled. Will 3 boxes of tile be enough to cover an area that is 112 square feet? _____

7. Mr. Oldfield printed 1400 concert tickets. How much did he charge per ticket? _____

8. Miss Irving paid $2542.17 for her new car. How much of that amount was sales tax? _____

Try this one!

9. Luther spent $18 for 6 gifts. How much did he spend for each gift? _____

Copyright © 1973, The Instructor Publications, Inc., Dansville, N.Y. All rights reserved.

Too Many Facts?

Name _____

Read:
Mrs. Lima is making 2 cakes for the bake sale. Mrs. Murphy is making 6 dozen brownies. Each cake takes 2 cups of flour and 1 cup of sugar. How much flour and sugar should Mrs. Lima use?

Think:
What facts are given in the problem? What question is asked? Which facts are needed to answer the question asked? One fact is not needed to answer the question about Mrs. Lima's cakes. That fact is: Mrs. Murphy is making 6 dozen brownies.

Some problems contain facts that are not needed to answer the question asked.

A. Read each problem carefully. Draw a line through any facts that are not needed to answer the question. Then solve the problem. Put answers in blanks. Show work here.

1. Tess mailed 17 cards. Her sister Bertha mailed 12 cards. An 8-cent stamp was used on each card. How much did the stamps cost for Tess's cards?

_____

2. José plans to put up 3 shelves that are each 4 feet long. The shelving board he needs costs 25¢ per foot. How many feet of shelving board does José need?

_____

3. Althea can put 18 cookies on one cookie sheet. They take 15 minutes to bake. How many cookies can Althea make if she fills 6 cookie sheets?

_____

4. Robby has 57 customers on his newspaper route. He has to pay 12¢ for each copy of the paper he delivers. How much does it cost Robby to deliver papers to one customer for 6 days a week?

_____

5. One Saturday 140 students picked up 250 pounds of trash along Route 7. Another group of 60 students worked along Route 14. How many students helped in the cleanup along Routes 7 and 14?

_____

6. The weatherman reported 2½ inches of rainfall this week. Last year the total rainfall was 60 inches. It rained twice as much this week as it did last week. What was last week's rainfall?

_____

Copyright © 1973, The Instructor Publications, Inc., Dansville, N.Y. All rights reserved.

Facts—Too Many? Too Few?

Name _____

A fact is something that is known to be true. Look for facts that help you find answers. Sometimes you have to use facts that you know already.

Read:
Todd is 11 years old. He earns $15.00 each week on his paper route. Also, he receives $1.50 allowance each week. How much allowance does Todd receive in a year?
How much money does Todd save in a year?

Think:
The facts in the problem are: Todd is 11 years old. He earns $15.00 each week on his paper route. He receives $1.50 allowance each week. To answer the first question asked, I must use a fact that is not stated—there are 52 weeks in a year. I cannot answer the second question because the problem does not give enough facts—I need to know how much Todd saves each week.
Notice that the first two facts—Todd is 11 years old and he earns $15.00 each week on his paper route—are not needed to answer the questions asked in the problem.

Some problems do not provide enough facts to answer the question asked. Some problems contain facts that are not needed to answer the question asked.

A. Carefully read each problem below. Underline each fact. If you need to use a fact that you know but that is not stated, write the needed fact. (Do not solve the problem.)

1. Janet spent 2 hours writing a report on Saturday. On Sunday she spent ½ hour doing math problems and 1 hour reading her history assignment. How much time did Janet spend doing homework that weekend? _____

2. Rita has been saving 50-cent pieces for 2 years. She now has 42 pieces. What is the value of her collection in dollars? _____

B. Read each problem below. Some of the problems contain facts that are not needed to answer the questions asked. Draw a line through any such facts. Other problems cannot be solved because one fact is missing. Write the fact that you must know before you can solve each of those problems. (Do not solve the problem.)

1. Muffin is a 9-year-old poodle. He came home on Monday after a 5-day stay at the animal hospital. Medicine costs were $14.70. X-rays and tests cost $43.00. Board was $12.00 per day. What was the total bill? _____

2. Herkimer saw a suit in Rockwell's window marked "Save $10." How much would Herkimer have to pay for the suit? _____

3. Susie's birthday is July 10. Her grandmother gave her $10; her parents bought her a record player; her brother got her a record; her aunt sent her $5; and Joy gave her a book. How much money did Susie get for her birthday? _____

Try this one!

4. Judy is 6 months old and weighs 14 pounds, 4 ounces. How much has she gained since birth? _____

Mathematics: Practice in Problem-Solving Skills—Book C
Copyright © 1973, The Instructor Publications, Inc., Dansville, N.Y. All rights reserved.

COMMUNICATIONS

SUBJECT: Communications LESSON TITLE: Introduction LESSON NUMBER: 1

Objectives	Procedures	Materials
1. To use a word puzzle to informally assess students' ability to reason and work with words.	1.1 Present the Wacky Words Sheet and do a few examples with the group. Class to complete assignment individually and discuss answers in a group.	1.1 Wacky Words Sheet from "Games" magazine.
2. To encourage the class to get to know one another through verbal interaction with a puzzle as the focus.		
3. To determine level of testing necessary for group.	3.1 Give TABE locator.	3.1 TABE locator and answer sheets.

Wacky Wordies Return! ★☆

We know. We swore in our July/August 1981 issue that Wacky Wordies would never appear in GAMES again. But a year and a half after their announced *final* final appearance, readers still write asking for more. Here then, by popular demand, are two more pages of them, composed in odd moments (very odd moments) by the editors at the magazine. Warning: These are positively, abs[illegible] Wacky Wordies we're ever doing.

Directions: The object is to discern a familiar word, phrase, saying, or name from each pictorial letter arrange[illegible] example, #1 depicts the phrase "melting pot." Wacky Wordie #2 shows a "jack-in-the-box." [illegible]

by the Editors of GAMES

SUBJECT: Communications LESSON TITLE: Main Idea LESSON NUMBER: 2a

Objectives	Procedures	Materials
1. To assess informally student's abilities to group and classify.	1.1 Students are divided into two groups of 5 or 6 and seated at two tables. Each student is given an assortment of attribute blocks and asked to sort them into two groups. Students are then asked to explain criteria for sorting. Blocks are combined and sorted again, according to new criteria. Subgroups can also be sorted. This activity continues until the groups have indentified all the attributes of the blocks.	1.1 Attribute Logic Blocks
2. To instruct and provide practice in grouping and classification.		1.2 Attribute block chain pattern.
3. To lay the groundwork for later discussion of main idea.		
	1.2 Groups play attribute block "Dominoes"--instructor chooses one block and places it in the center of the table. Each student chooses another which differs in only one	

SUBJECT: Communications LESSON TITLE: Main Idea LESSON NUMBER: 2a(Con't.)

Objectives	Procedures	Materials
	attribute from the center choice.	
	1.3 Attribute block chains are constructed as a group, using patterns provided.	
4. To assess formally the reading level of the students.	4.1 Administer the Locator test to those who are new to the group.	4.1 TABE Locator test and Answer sheets.
	4.2 Administer TABE Reading test, Levels M and D, as appropriate.	4.2 TABE Reading test, Levels M and D and Answer sheets.

1.2

Attribute Block Chain Pattern

SUBJECT: Communications LESSON TITLE: Main Idea LESSON NUMBER: 2b

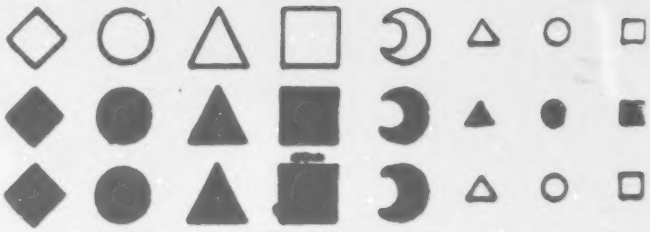
Objectives	Procedures	Materials
1. To provide practice with grouping of objects and with defining characteristics that items share.	1.1 Using overheads of groups of five shapes which vary in size and color, work as a group to fill in missing shapes in Venns.	1.1 Three overheads reproduced from "An inventory of Piaget's Skills." 1.2 Overhead projector.
2. To begin to develop the concept of main idea as outgrowth of classification.	2.1 Using various lists of words, find: a. Topic word from a list of words. b. Topic word and misplaced word. c. Topic word where the topic word is not included on the list. d. Topic word where the list does not include it, and one word is misplaced.	2.1 Tactics in Reading I Card 39 Front.
	2.2 Using the topic Thanksgiving.	

SUBJECT: Communications LESSON TITLE: Main Idea LESSON NUMBER: 2b (Con't.)

Objectives	Procedures	Materials
	generate a list of words. Subdivide the list into two related groups.	
3. To provide practice in finding the main idea of a paragraph.	3.1 Find the topic sentence of 4 paragraphs, working as a group. Guide students in using the same thinking they applied in 2.	3.1 Tactics in Reading I Card 39 Back.

example

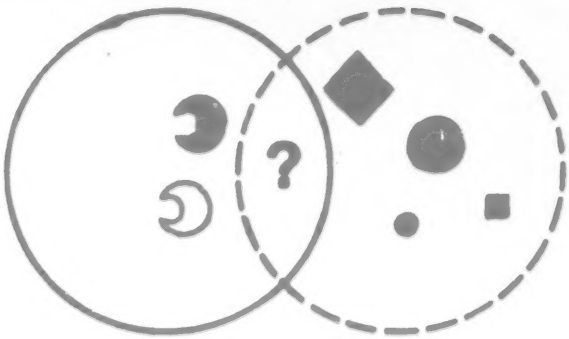
We have many different blocks like these.



These blocks go in this circle.

These blocks go in this circle.

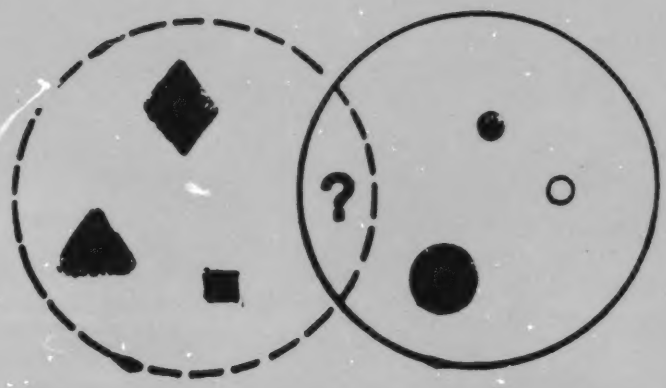
We put the circles together like this.



Which block belongs in the middle?

53

Here are two circles.

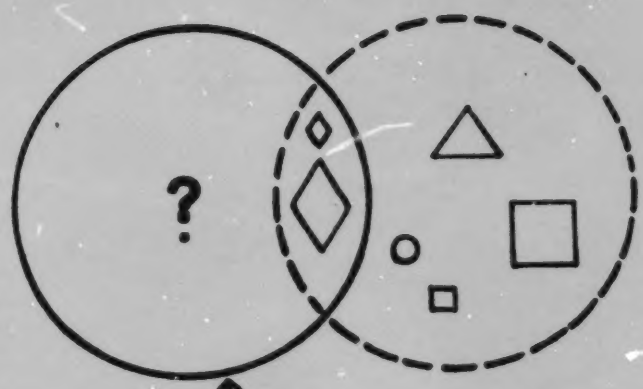


Which block belongs in the middle?

A B C D

54

Here are two circles.

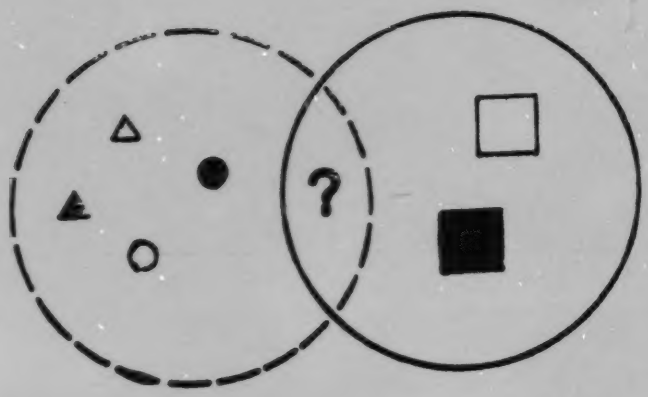


Which block belongs in this circle?

A B C D

55

Here are two circles.

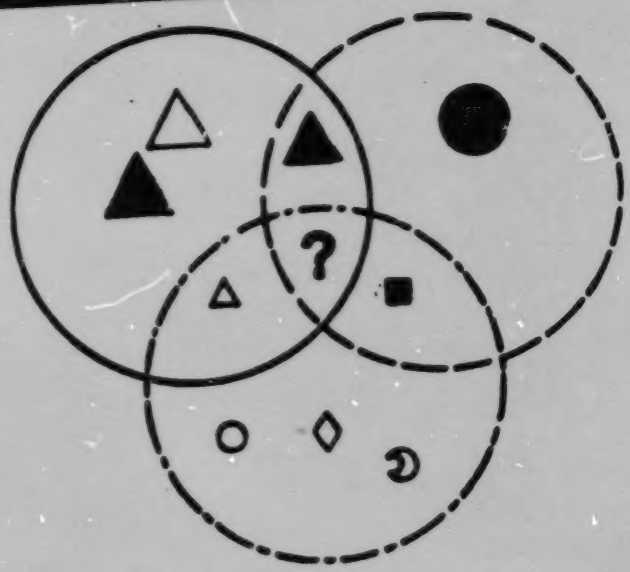


Which blocks belong in the middle?

A B C D

56

Here are three circles.



Which block belongs in the middle?

A B C D

PARAGRAPH MEANING

TOPICS

All except the very simplest objects are made up of a number of different parts. For example, an automobile is constructed of a special kind of frame, engine, wheels, hood, bumpers, doors, and many other parts. All these parts add up to make an automobile.

A paragraph, like an automobile, is made up of different parts, or details. In a well-written paragraph, all the details refer to one thing—the topic of the paragraph.

EXERCISE 1

PART A One item in each column below is the **topic** to which all the other items refer. On your paper, next to the number of each list, write the topic of that list.

1. pedal	2. steeple	3. legs	4. friendliness
wheel	altar	chair	interest in others
bicycle	pew	rungs	sense of humor
handlebars	church	seat	good manners
chain	aisle	arms	cooperativeness
spoke	belfry	back	characteristics of a popular student

PART B Each list below contains one item that does not belong there. Ignore that item. Write, as before, the topic of each list.

5. branches	6. poem	7. music	8. happiness
maples	literature	art	sorrow
elms	play	painting	cleanliness
oaks	novel	crayon	fear
trees	plot	dancing	anger
cedars	short story	drama	emotion

EXERCISE 2

Often the topic of a paragraph or the subject of a long selection is not directly stated. Paying attention to the details will help you decide what it is. Suppose a paragraph discusses ships, airplanes, automobiles, and trains. You can see that there is something similar about these things. *Methods of transportation* names that similarity and probably is the topic of the paragraph.

PART A All the items in each list below refer to one general topic, but this time the topic is not named. You must decide what it is.

Divide your paper into two columns. In column I, write the number of each list and a word or phrase that would be a good topic for that list. In column II write as many details as you can remember without looking at the list. Then add one other detail that might have been in the list and was not.

1. stores	2. golf	3. flute	4. eating peas with a knife
churches	baseball	oboe	interrupting someone who is speaking
skyscrapers	tennis	saxophone	sneezing in someone's face
houses	bowling	clarinet	speaking with your mouth full
factories	football	trombone	pushing and shoving
schools	hockey	trumpet	talking aloud during a movie

PART B One detail in each list below does not belong with the others. Ignore it. Write the topic of each list in column I on your paper and the details that belong under that topic (from memory) in column II. Add one detail of your own to each group.

5. Los Angeles	6. letters	7. ounces	8. courage	9. bitter
Chicago	books	yards	truthfulness	sweet
New Orleans	magazines	miles	loyalty	salty
Ohio	circulars	centimeters	industry	yellow
Miami	pamphlets	rods	kindness	sour
Boston	newspapers	inches	thinness	sharp

COPYRIGHT © 1961 BY SCOTT, FORESMAN AND COMPANY
PRINTED IN THE UNITED STATES OF AMERICA

DO NOT WRITE ON THIS CARD

PARAGRAPH MEANING

RECOGNIZING THE TOPIC

When a good reader has finished reading a paragraph he asks himself, "What was this paragraph about?" He tries to think of a topic that tells exactly what the paragraph is about. For example, if the paragraph is about water polo, he would not be satisfied with a general topic like "a water sport" or even "polo."

EXERCISE 3 One of the phrases following each paragraph below is the topic of the paragraph. Write on your paper the number of each paragraph and the letter of the topic that tells exactly what the paragraph is about.

1. Until about fifteen years ago, the most powerful microscope that scientists could make magnified objects 2500 times. Then an entirely new kind of microscope was invented. It can be used to make things look 200,000 times larger. This new instrument is called the electron microscope. An ordinary microscope uses rays of light. But the electron microscope uses an invisible beam of electrons, which are particles of electricity. With the new microscope, biologists have at last seen the very tiny germs that cause influenza. Other important discoveries have also been made with it.

Adapted from *Science Problems I* by Beauchamp, Mayfield, and West. Scott, Foresman and Company, 1957.

a. The electron microscope
b. Scientific instruments
c. Influenza germs
d. Microscopes

2. The West Indies island of Barbados is a shopper's paradise for those who like British products. Cashmere and Shetland wool sweaters, tweeds, Liberty scarves, and doeskin gloves are among the goods that can give a traveler European elegance at about half the price he would pay in the States. Small shops tucked into side streets contain a wide variety of imports as well as local merchandise such as rum, baskets, straw hats, and tortoise-shell work. Pleasant hours may also be whiled away in the fruit and vegetable market, with its colorful trays of mangos, papayas, and breadfruit. And it's almost certain that visitors will want to rest for a bit on the balcony of Goddard's store to sip a cool drink and decide on further purchases.

a. Vacation fun
b. Life in Barbados
c. Things to buy in Barbados
d. British imports

3. Anyone who has slept on a park bench knows that newspapers keep out the cold. Now a Nevada corporation has put the insulating qualities of newsprint to work. It mixes torn-up newspapers with boric acid to produce pellets, called Thermo-K, which it claims have a much lower heat-loss factor than materials usually used for insulation. The manufacturers say that Thermo-K contains more air spaces and is three times lighter than competing insulation. Thermo-K also resists moisture, repels all kinds of insects and vermin, and will take a 4000° blast from a blowtorch without burning.

a. Insulating materials
b. Insulation made of newspapers
c. Advantages of Thermo-K
d. Sleeping on a park bench

4. Reëntering the earth's atmosphere from a moon flight poses difficult navigation problems. If the vehicle reënters the earth's atmosphere at too sharp an angle, it will slow down too quickly and destroy the passenger. If it comes in at too slight an angle, it will keep going and never land. A space vehicle that cannot maneuver would have to hit a corridor only seven miles wide. A much more complicated craft that can change direction would still have only a sixty-mile corridor. As a scientist from the National Aeronautics and Space Administration has expressed it: "The problem is about the same as William Tell would have had if he had had to shoot the skin off the apple instead of just hitting the apple. It is difficult, but not impossible."

a. Problems involved in flying to the moon
b. Space vehicles
c. The National Aeronautics and Space Administration
d. Problems of reentry from a moon flight

Paragraphs 3 and 4 adapted from "Atlantic Report on Science and Industry" in *The Atlantic*, December 1960. Used by permission of *The Atlantic Monthly*.

COPYRIGHT © 1961 BY SCOTT, FORESMAN AND COMPANY
PRINTED IN THE UNITED STATES OF AMERICA

SUBJECT: Communications LESSON TITLE: The Sentence LESSON NUMBER: 3a

Objectives	Procedures	Materials
1. To begin to develop abilities to classify words into types--specifically, nouns and verbs.	1.1 Have on the board a list of 12 nouns--a variety of types. Characterize the list of words on the board with the group. Elicit the traditional definition of nouns, also discuss the ability of these words to be made plural and to be qualified by signal words. Sort through the words in the text--classify them as nouns or not nouns.	1.1 Text Grammar and Usage p. 45 list of 30 words.
	1.2 Characterize a second list of verbs on the board similarly, elicit the traditional definition of a verb, then discuss the ability of these words to change endings and use helping words to express time.	1.2 p. 16 text ex. A

M-26

SUBJECT: Communications LESSON TITLE: The Sentence LESSON NUMBER: 3a (Con't.)

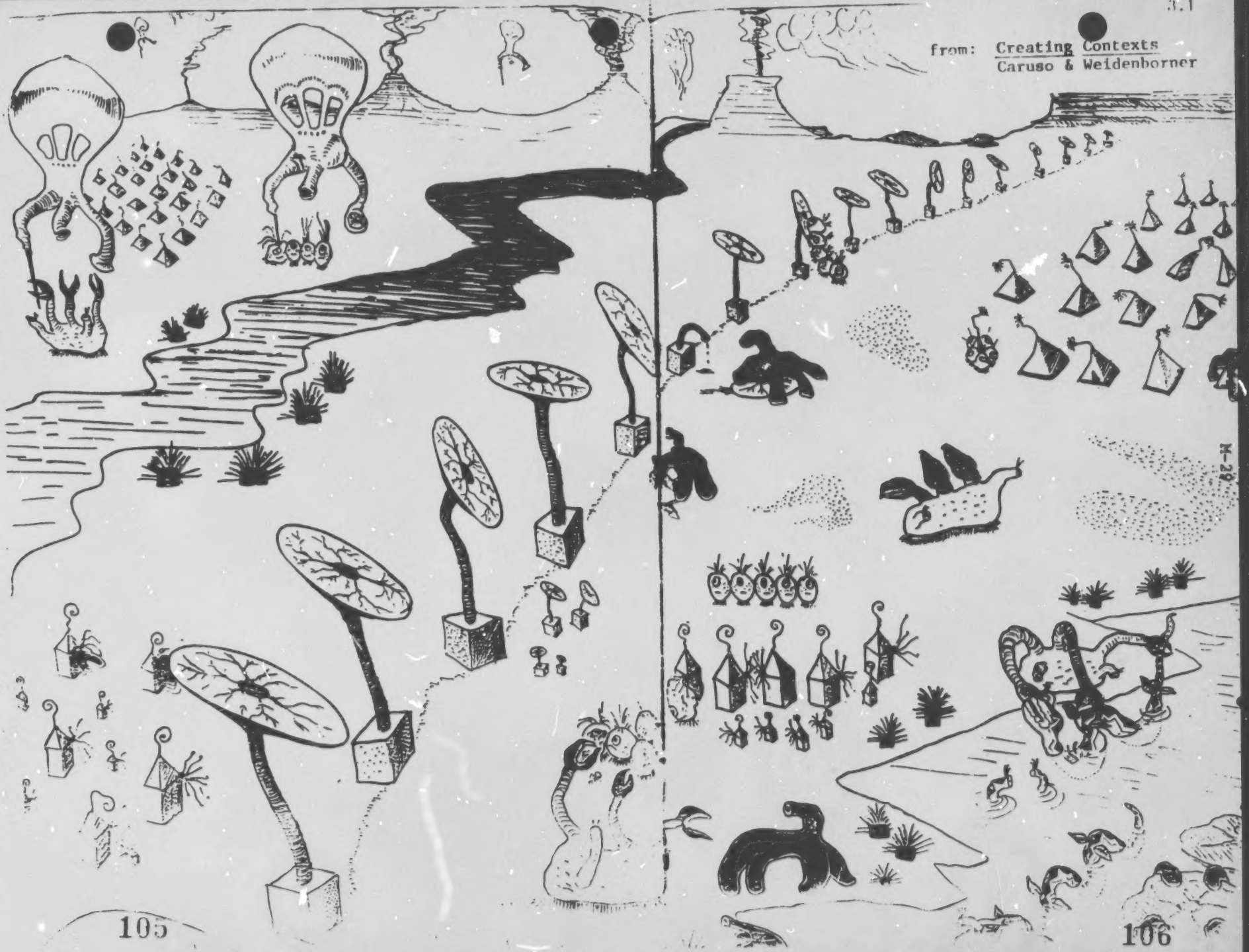
Objectives	Procedures	Materials
2. To define and recognize the sentence.	2.1 Put some sentences on the board; also some fragments. With the group, classify them as sentences/not sentences. Elicit definition of a sentence. By adding a subordinator to a complete sentence, bring in idea of complete thought.	
3. To provide practice in sentence writing.	3.1 Introduce the overhead of attached picture. Discuss it in terms of the types of life forms depicted. Lead the class to explore various ways of classifying the life forms, and to speculate on what might be going on.	3.1 Overhead, taken from Creating Contexts fig. 4.8 3.1 Overhead projector.
	3.2 Students write 5 sentences, using the following format:	

M-27

SUBJECT: Communications LESSON TITLE: The Sentence LESSON NUMBER: 3a (Con't.)

Objectives	Procedures	Materials
	Sentence #1. Tells the main idea	
	of what is going on with the	
	picture.	
	Sentence #2. Divides the life	
	forms into 2 groups.	
	Sentence #3. Gives a detail of	
	one group.	
	Sentence #4. Gives a detail of	
	the other group.	
	Sentence #5. Draws a conclusion	
	about the outcome.	

from: Creating Contexts
Caruso & Weidenborner



SUBJECT: Communications LESSON TITLE: Following Directions LESSON NUMBER: 4a

Objectives	Procedures	Materials
1. To assist students in recognizing some general skills needed to give and follow oral directions.	1.1 Introductory activity: Students are given a grid of circles (attached). Each student makes a pattern by coloring in a random selection of circles in a random way. (1/2 circle, striped circle, etc.) Students pair off and one student directs the partner to reproduce the pattern without seeing it--using verbal directions only.	1.1 Following Directions: Circle Grid
	1.2 Discuss importance of using specific directional words, and isolate any other difficulties that might have surfaced for the listeners--then reverse roles in each pain. Students should give	

SUBJECT: Communications LESSON TITLE: Following Directions LESSON NUMBER: 4a (Con't.)

Objectives	Procedures	Materials
	better directions and follow more	
	accurately the second time.	
	1.3 Discuss the breakdown of steps in	
	making verbal directions clear.	
	a. Decide upon a mutually	
	familiar starting place.	
	b. Mentally walk through the pro-	
	cedure.	
	c. Divide the directions into steps	
	for the listener.	
	1.4 Discuss related skills necessary to	
	follow oral directions	
	a. Make sure starting point is	
	understood.	
	b. Clarify any terms that are not	
	understood.	

M-31

SUBJECT: Communications LESSON TITLE: Following Directions LESSON NUMBER: 4a (Con't.)

Objectives	Procedures	Materials
	c. Visualize how each step will be followed.	
2. To provide practice in following and giving oral directions.	2.1 Students independently draw diagram from instructions given orally—then do together using overhead projector.	2.1 Set of oral directions for teacher to give, "Oral Directions #1" 2.1 Overhead projector
	2.2 Student volunteers give the class directions for such activities as: a. Getting from one point on campus to another (use specific examples) b. Preparing a Thanksgiving turkey c. Performing a specific work related task, i.e., cleaning a classroom.	

SUBJECT: Communications LESSON TITLE: Following Directions LESSON NUMBER: 4a (Con't.)

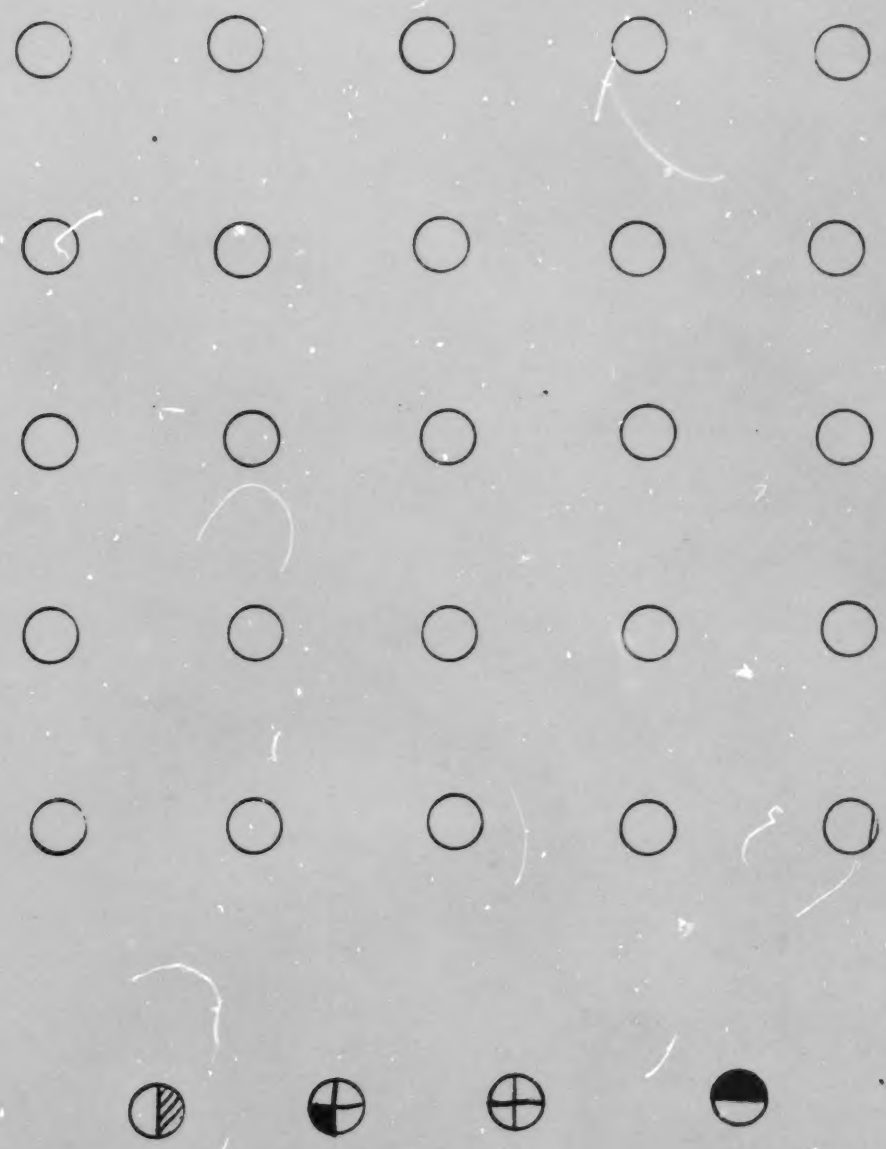
Objectives	Procedures	Materials
3. To assist students in recognizing some general skills needed to give and follow written directions.	3.1 Discuss steps in following written directions:	
	a. Read everything first.	
	b. Select a place to begin.	
	c. Make sure each symbol and illustration is understood.	
	d. Divide directions in to steps.	
	e. Visualize how you will follow each step.	
4. To provide practice in following written directions.	4.1 Draw a map based on the attached instructions. Begin with the class to clarify the concept of NSEW; also mentally turning one's body right or left on paper. Students work independently--then discuss together	4.1 Directions to Olga's Bookstore.

SUBJECT: Communications LESSON TITLE: Following Directions LESSON NUMBER: 4a (Con't.)

Objectives	Procedures	Materials
	4.2 Assignment: Appropriate Lab Assignments from Specific Skill Builders—Following Directions, also, attached exercise.	4.2 Lab Assignments, also, "Owner's Manual for a Fire Extinguisher".

1.1

Following Directions: Circle Grid



Oral Directions #1

Draw a two inch box. Draw a circle that fits inside the box. In the center of this circle place a dot that you can see easily. Mark this dot with a 1.

Now draw a line from the dot straight up to touch the top of the circle. Put another dot touching the circle directly below the center or number 1 dot. Number this dot 2.

Place a third dot on the circle about 1/2 inch to the left of dot 2. Number this on 3. Now put a fourth dot on the circle about 1/2 inch to the right of dot number 2. This dot is number 4.

Go back to dot 1 in the center of the circle. Draw a line from this dot to dot number 3, to the left on the circle. Do the same thing to dot number 4, on the right. Do not draw any line to the second dot.

Adapted from: Building Basic Skills in Reading Book 2 Contemporary Books, Inc., 1982.

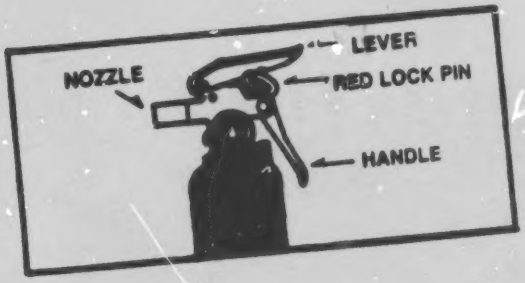
Directions to Olga's Bookstore

Travel east on Ridge Avenue from CCAC, follow Ridge to the stop sign where Ridge merges with Western Avenue. The park is on your left. Continue on Western through the blinking light to the next light at Western and Arch Street. Turn left in Arch. The park is still on your left and St. Peter Church in on the north east corner of Arch and Western. Arch takes a sharp right after one block, then a sharp left after another. Follow it to North Avenue where there is a stop light. There is park on the left and right of you now. Turn right and drive along the park. You'll pass Reddour St. on the left. Federal Street is at the next light. It is a major street that runs north and south of North Avenue. Turn left here. Olga's bookstore is on the left side of the street in the first block of Federal after North.

40. OWNER'S MANUAL FOR A FIRE EXTINGUISHER

Below is part of the Operating Instructions from the Owner's Manual for a fire extinguisher. Read it carefully, and look at the drawings showing the parts of the extinguisher.

OWNER'S MANUAL for FIRE EXTINGUISHER



OPERATING INSTRUCTIONS

Remove from wall hanger or strap/clamp bracket.

Grasp unit and pull red lock pin from lever and handle. Hold unit upright with hand under handle and thumb on top of lever. Unit is designed to discharge the dry chemical agent ONLY IN UPRIGHT POSITION.

Keep safe distance from fire (at least 6 feet) and near an exit. Aim nozzle at base of fire (not at flames or smoke). Do not get too close as the discharge stream may scatter the fire. If it does, move back. Play it safe. Keep away from the fire's fuel source and avoid breathing vapors, fumes and heated smoke as much as possible.

Press lever downward and spray dry chemical powder (powder stream will shoot over 10 foot distance) at base of flame in quick, side-to-side motion to erase the flames. When the extinguishing agent comes in contact with the fire, the fire will flare and appear to grow larger. Don't panic. This condition is a normal and temporary reaction before the agent suppresses the fire. Direct all of the discharging dry chemical agent on the fire and make sure the fire is completely extinguished. After fire is out, carefully watch for "flashback".

From: Life Skills Reading 2, by Carol Mullins, Educational Design, Inc., 1981.

40. Owner's Manual for a Fire Extinguisher

WORDS AND MEANINGS

fire extinguisher—a thing you use to spray chemicals that put out fires

grasp—hold on to

lock pin—a special red-colored pin that runs through the lever on top of the extinguisher. The extinguisher only works when you pull the lock pin out.

lever—thing you push down to make the extinguisher work

chemical agent—the special chemicals that do the job of putting out the fire

discharge—send out

nozzle—the "nose" of the extinguisher, where the chemical agent sprays out of

vapors and fumes—gases

erase—get rid of

flare—suddenly get bigger

panic—do crazy things when you suddenly feel a lot of fear

suppresses—puts out

extinguished—put out

QUESTIONS

1. Georgia quickly took the extinguisher from the wall, hurried to the fire, and pushed the lever. Nothing happened.

   What was probably wrong?

   __ a. she forgot to uncover the nozzle

   __ b. she forgot to refill the chemical

   __ c. she forgot to unlock the lever

2. Look at this picture:

   Which arrow shows where you aim the nozzle?

   __ arrow A __ arrow B

3. What is a good distance to stand when you put out a fire with this extinguisher?

   __ a. 1 to 5 feet from the fire

   __ b. 6 to 10 feet from the fire

   __ c. 10 to 20 feet from the fire

4. What should you do if the force of the chemical hitting the fire seems to be spreading the fire around?

   __ a. move closer

   __ b. move back

   __ c. turn down the amount of chemical

5. People putting out fires with this extinguisher are often frightened because when the chemical first hits the fire it _____

   (fill in the word)

6. The word flashback as used in the Operating Instructions (last word) probably means—

   __ a. fire coming back to life after being put out

   __ b. remembering something from the past

   __ c. sparks flying as the fire burns

SUBJECT: Communications LESSON TITLE: Irregular Verbs LESSON NUMBER: 5a

Objectives	Procedures	Materials
1. To familiarize students with correct verb forms to use with/without helping verbs.	1.1 Discuss the four principal parts of regular verbs, contrast them with the irregular forms of "to write," "to sing." Draw a chart on the board.	
	1.2 Discuss use of helping verb.	
	1.3 Give examples of use of the verbs on p. 22. Students work on exercises which follow to p. 23. Continue in the same manner, with the verbs given on pp. 92, 93 and pp. 136, 137.	1.3 Grammar and Usage. Lee C. Deighton
2. To provide a concrete, easily practiced lesson in the type of grammar which students expect.		

SUBJECT: Communications LESSON TITLE: Irregular verbs, Comparison of Adverbs Adjectives LESSON NUMBER: 5b

Objectives	Procedures	Materials
1. To clarify confusion over lie, lay	1.1 Explain differences in related verbs such as rise, raise and sit, set. Finally lie, lay. Do lesson pp. 138-139. Relate to the chart drawn in the previous lesson.	1.1 Grammar and Usage.
2. To explain methods of comparison of adverbs. adjectives and clarify when degrees are used.	2.1 Text pp. 35-36 is basis of explanation of this concept. Draw a chart to show degrees.	2.1 Grammar and Usage. pp. 35-36.
3. To provide more concrete, easily practiced grammar instruction.		

SUBJECT: Communications LESSON TITLE: Visualizing LESSON NUMBER: 6a

Objectives	Procedures	Materials
1. To deal with visualization as a skill related to following directions.	1.1 Discuss successes and problems with work in following directions last week. Success occurred with the familiar. Lack of success occurred with the unfamiliar. Relate to hearing a description of someone's new house or outfit.	
2. To clarify some methods of improving student's ability to visualize.	2.1 Discuss the need to: a. Listen carefully. b. Form mental pictures by listening for relationships and directional clue words. c. Be sure all words, such as parallel, right angles, are understood.	

SUBJECT: Communications LESSON TITLE: Visualizing LESSON NUMBER: 6a (Con't.)

Objectives	Procedures	Materials
3. To provide practice in visualizing.	3.1 Read the instructions (Oral Directions #2) that describe how to make a certain diagram; however, students don't draw--they must visualize what would be created. Possibly, this will need to be read more than one time. After someone in the group figures out what the end product is to be (Baseball Diamond) the others can listen again more able to visualize the directions.	3.1 Oral Directions #2.
	3.2 (Attached) Visualizing Exercise 9. Read #1 aloud as students follow silently. Together, using board, attempt to draw the route described. Discuss what things we	3.2 Visualizing Ex. 9

M-43

SUBJECT: Communications LESSON TITLE: Visualizing LESSON NUMBER: 6a (Con't.)

Objectives	Procedures	Materials
	tended to overlook when instructions were given. Continue with #2, 3, having students do the drawing independently, then discussing with class.	

Oral Directions #2 3.1

Draw a dot in the middle of a piece of paper. Under the dot, write the letter H. Draw another dot straight north of the first one, about two inches away. Above this dot write the number 2. Midway between these dots, make a third dot. Draw a small square around this dot. Place the letter P above it. About one inch straight west of this P square, draw another dot with a 3 under it. One inch directly east of the P square, draw another dot with a 1 under it. Connect the dots with straight lines going from H to 1 to 2 to 3 and back to H again. What figure have you drawn?

From: Building Basic Skills in Reading Book 2 Contemporary Books, Inc. 1982.

EXERCISE 9

Visualizing

Directions: Read this story carefully. As you read, try to visualize the route taken by the men and the dog. Read only once. Afterward you will be asked to draw a rough map from memory.

Selection 1

From the village the men followed the dog west for about three miles along a winding forest path. Here they came to a narrow dirt road. The dog turned right without hesitation and followed the road north for another two miles to a wooden bridge spanning a rushing mountain stream. At this point he seemed confused for a while. Presently, however, he picked up the scent again and moved east along the banks of the stream, following its winding course for half a mile. Here in a sheltered spot under a tree, the men and the dog came upon the lost child, asleep and unharmed.

Now turn to page 177.

Directions: Visualize as you read. Afterward you will be asked to fill in a floor plan of John's house.

Selection 2

With the help of the neighbors John was able to complete the house in six days. It was sturdy and square and built to stand. Only the finishing work remained.

Through the middle of the front wall he cut a large door and, on either side, a small window. At the back a rounded stone fireplace took up the entire left corner, but in each of the other three corners he built a bedstead. Directly in the center of the room he set a great sea chest which was to serve that winter as a table.

Now turn to page 177.

Directions: Read so that you can draw a rough map of the plan for the city.

Selection 3

Early in the eighteenth century when the city was laid out, a broad, handsome street was planned. It was to be named King's Road. At its western end was to be the Capitol building, and at its eastern end, the Governor's residence. Parallel to King's Road and on either side of it were two other streets and intersecting them all at right angles, two cross streets. On the north side of King's Road and about midway on its length was to be the theatre building, and on the south side, the dwellings of the two richest men in town.

Now turn to page 177.

From: Breaking the Reading Barrier, by Doris Wilcox Gilbert, Prentice Hall, 1959.

SUBJECT: Communications LESSON TITLE: Visualizing LESSON NUMBER: 6b

Objectives	Procedures	Materials
1. To apply the problem solving model to math problems which require visualization.	1.1 Review the steps in the problem solving model. Reiterate the idea of making drawings or diagrams to clarify description when the problem is examined from all angles (step #1).	
	1.2 Proceed to the problems on the handout, working together and diagramming on the board when appropriate.	1.2 Handout: Visualizing...Math Problems

Visualizing...Math Problems

1. What are the outside dimensions of a closed box built out of 1/2 inch maple whose inside dimensions are: Depth 6"
   Length 9"
   Width 7"

2. A wall is 4 7/8" thick. Paneling that is 6/8" thick is applied to both sides of the wall. How thick is the wall after the paneling is applied?

3. A tabletop is 1 2/5 centimeters thick. The legs on this table are 74 5/8 centimeters. What is the distance from the floor to the top of the table?

4. Four people plan for a 6-day backpack trip. If the food ration carried by each person is to be 24 ounces per day, what should be the total number of pounds carried by the group?

   (1) 30 (2) 36 (3) 48 (4) 240 (5) 576

5. How many 5-foot segments of framing will be needed to make 3 picture frames each of which is 12 inches high and 18 inches wide?

   (1) 3 (2) 4 (3) 5 (4) 6 (5) 15

6. A nonstop flight from New York to San Francisco leaves Kennedy Airport in New York at 11:35 p. m. Eastern Standard time. It arrives in San Francisco at 2:30 a. m. Pacific Standard time. Pacific Standard time is 3 hours earlier than Eastern Standard time so that, for example, at 5 p. m. Eastern Standard time, it is 2 p. m. Pacific Standard time. How long was the flight?

   (1) 2 hr 55 min
   (2) 5 hr 25 min
   (3) 5 hr 55 min
   (4) 6 hr 55 min
   (5) 7 hr 25 min

SUBJECT: Communications LESSON TITLE: Map Reading LESSON NUMBER: 7a

Objectives	Procedures	Materials
1. To help the students become comfortable with placing themselves, in their present position, into the proper place in the picture.	1.1 Overhead dealing with point of view. Discuss method of mentally placing the body in a new position.	1.1 Overhead from Inventory of Piaget.
2. To introduce specific map reading skills: a. Use of a scale. b. Use of the legend. c. Interpreting a map in relation to what is known.	2.1 Discuss the symbolic language used by map makers: a. Grids and indexes to locate specific points. b. Scales c. North orientation of a map. d. Legend--common symbols.	
	2.2 Using a map of Pittsburgh, demonstrate each of the above.	2.2 Street maps of Pittsburgh.

SUBJECT: Communications LESSON TITLE: Map Reading LESSON NUMBER: 7a (Con't.)

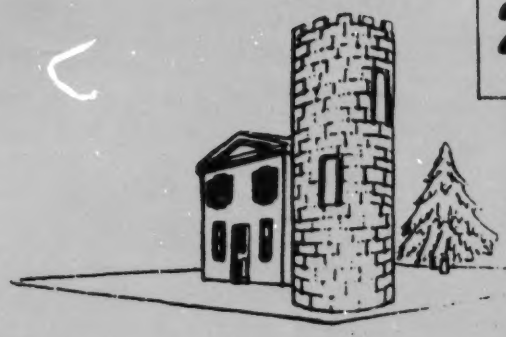
Objectives	Procedures	Materials
	on the map using the index. They trace the route taken to work, and measure the distance using scale of miles.	

Look at the picture in the example on page 16.

What does Rita see?

27

A



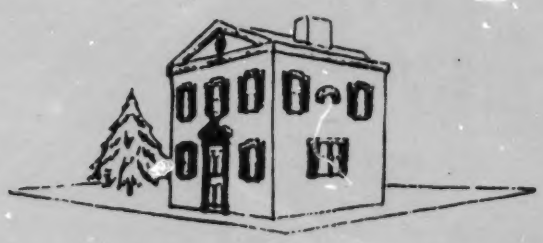
B

D

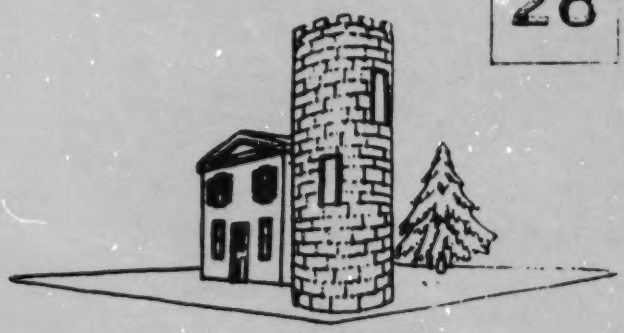
Look at the picture in the example on page 16.

What does Clara see?

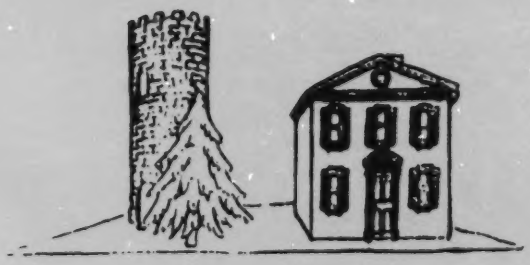
28



A



B



C

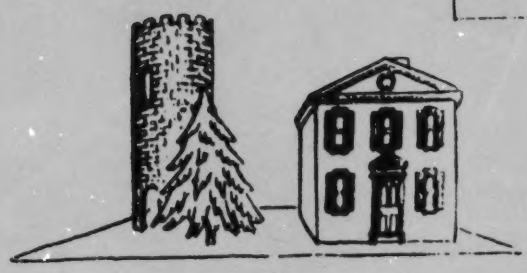
D

25

Look at the picture in the example on page 16.

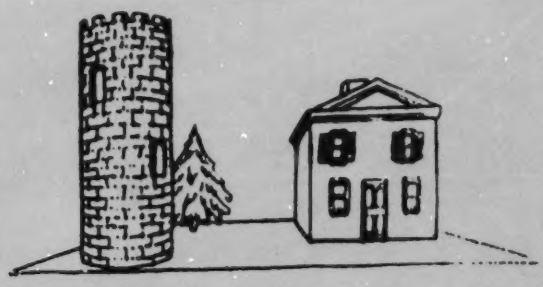
What does Joe see?

A



B

C

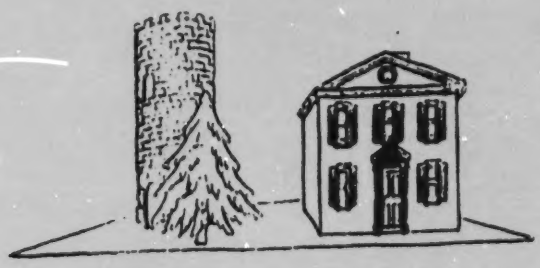


D

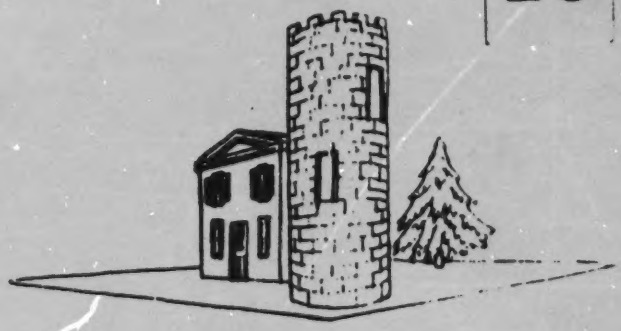
26

Look at the picture in the example on page 16.

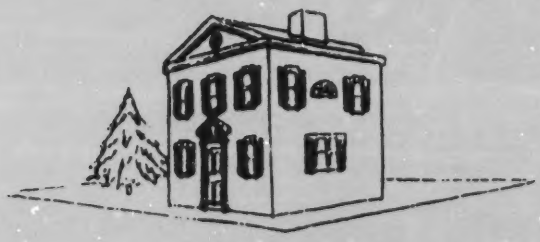
What does Tim see?



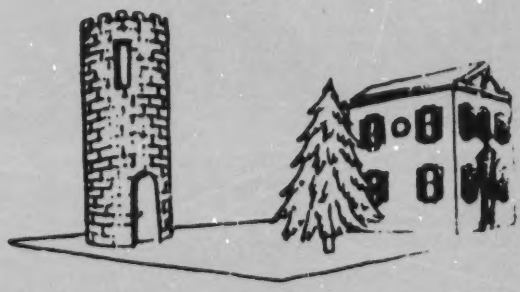
A



B



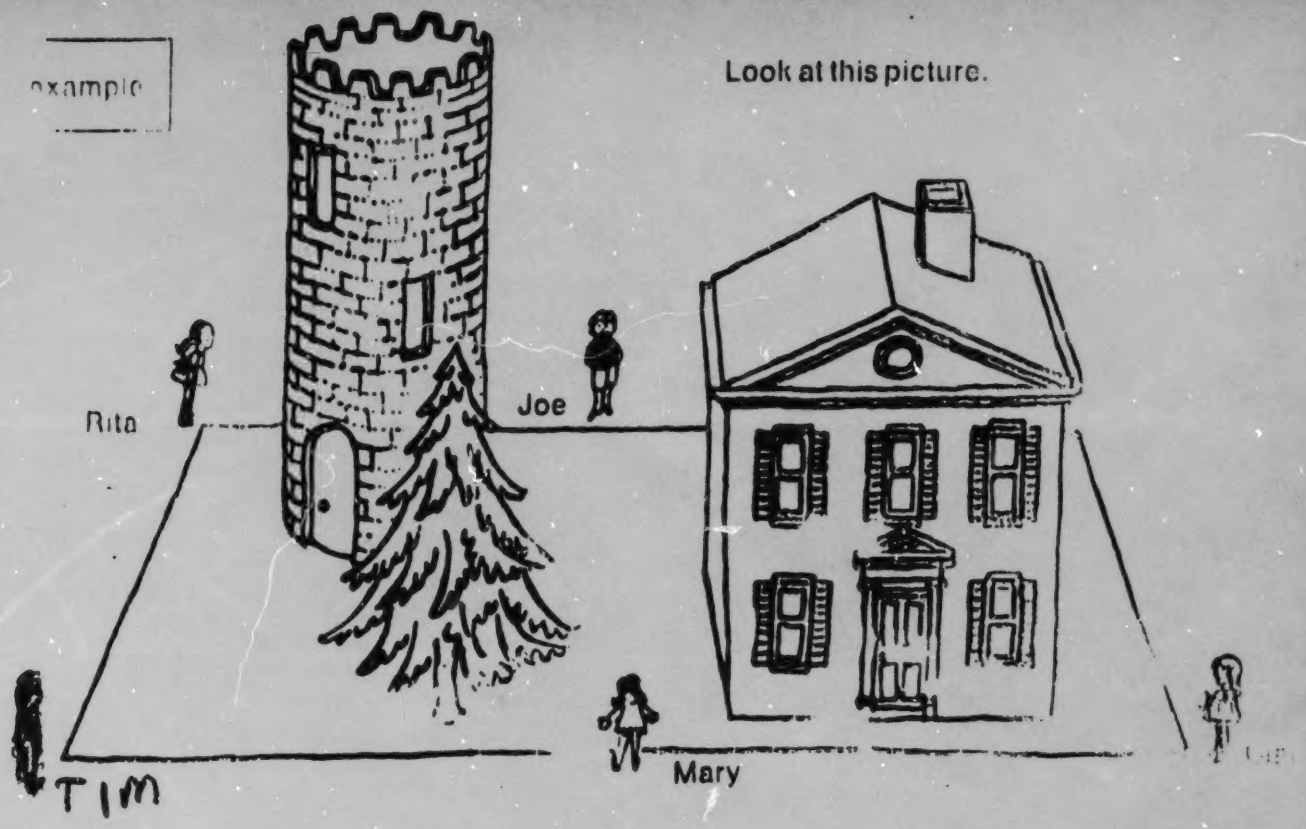
C



D

example

Look at this picture.



example

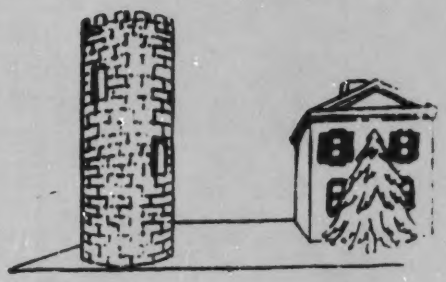
Look at the picture in the example.

What does Mary see?

A

B

C



D

SUBJECT: Communications LESSON TITLE: Map Reading LESSON NUMBER: 7b

Objectives	Procedures	Materials
1. To apply the skill of visualization to map reading; to relate the known surrounding to a map.	1.1 Familiarize the students with the symbols characteristic of a contour map; discuss methods of determining the direction of the rise of the contours; the signifigance of closely spaced contours. The concepts can be drawn from the group by locating familiar areas on the contour map. For example, Mt. Washington and the cliff along the river--note how the contours run together.	1.1 Contour map of the Pittsburgh city area.
	1.2 Discuss immediate college area and contours. Relate the relative flatness of the area to the grid pattern of the streets.	

SUBJECT: Communications LESSON TITLE: Map Reading LESSON NUMBER: 7b (Con't.)

Objectives	Procedures	Materials
	1.3 Relate contours of the city to park areas and heavely populated areas (Park areas are steep; the most heavily populated areas are relatively flat).	
	1.4 Allow time for students to study the map and locate home and familiar landmarks.	

SUBJECT: Communications LESSON TITLE: Writing a Job Description LESSON NUMBER: 8

Objectives	Procedures	Materials
1. To apply the problem solving model to the organization of the information necessary in writing an extended description.	1.1 A problem (Attached) is presented to the group.	1.1 A Problem
	1.2 The instructor guides the group in approaching the problem using the problem solving model. Through discussion, something similar to the following emerges: #1 Fact finding: I need to define my old job before I can replace myself. #2 Problem finding: What do I do each day that is required? Is there anything I have added on my own? #3 Idea finding: List all duties. Organize the list. Be through.	

SUBJECT: Communications LESSON TITLE: Writing a Job Description LESSON NUMBER: 8 (Con't.)

Objectives	Procedures	Materials
	List requirements for job, etc.	
	2.1 Instructor suggests that #4 Solution Finding begins by making a list of duties and grouping them into general categories. A sample list "Duties on the Job" is distributed and grouping is done for practice. Students do the work on their own, instructor circulates. Class pools information and writes some sample descriptive sentences together.	2.1 Duties on the Job
	2.2 Now students begin making lists on their own. Instructor circulates and assists with listing, grouping and sentence writing. Specific	

SUBJECT: Communications LESSON TITLE: Writing a Job Description LESSON NUMBER: 8 (Con't.)

Objectives	Procedures	Materials
	Job Description format, while	
	guided by instructor when necessary,	
	is developed by each student if	
	possible.	
	2.3 Final products are read to the class.	

A Problem

You have been promoted/obtained a job. Your first task is to find a replacement for yourself. Because you have done your duties so regularly and for such a long time, you are having difficulty defining what your replacement will need to do.

Duties on the job:

answer telephone
distribute mail
take telephone messages
answer questions about program
register participants
mail information to callers as needed
direct calls
file
greet visitors
type
schedule students in lab
make appointments
order office supplies
order texts
set up files
make copies
undertake large mailing projects
keep waiting list of tutees
call students for appointments with coordinator

MATHEMATICS

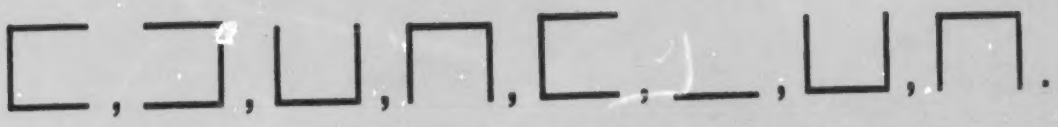
SUBJECT: Mathematics LESSON TITLE: Introduction LESSON NUMBER: 1a

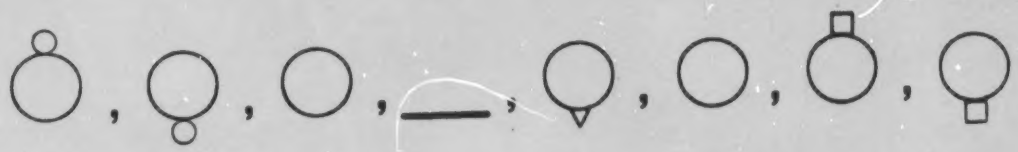
Objectives	Procedures	Materials
1. To introduce students to concept that the steps of mathematics involve investigating predictable patterns	1.1 Use overheads to identify and discuss the elements of a series. (use figure and then go to numbers)	1.1 Overheads on number series from Intuitive Math
	1.2 Have students work on Number Series Sheet independently, then go over as a group. Use examples to mention words: fraction, decimal, square root, etc. (This will provide informal assessment of students' ability as well.	1.2 Number Series Sheet from Mathematics for Today
	1.3 Have students generate their own series using numbers, letters or figures.	
2. To ~~assess~~ 158 entry level competency of students	2.1 Give Math Inventory	2.1 Brigance Mathematics Inventory 158

LOGIC and COMPREHENSION

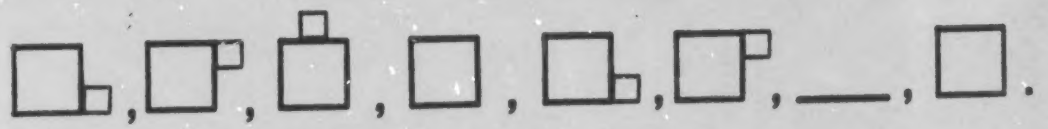
Directions: Study the arrangement of the numbers in the problems below. In each case, a part is missing from the arrangement. Write in the missing part.

(16) $\frac{17}{7}, \frac{15}{8}, \frac{13}{9}, \_\_, \frac{9}{11}.$

(17) 

(18) 

(19)

(20) 

LOGIC and COMPREHENSION

Directions: Study the arrangement of the numbers in the problems below. In each case, a part is missing from the arrangement. Write in the missing part.

(16) 2 , $\dot{4}$, 3 , $\dot{5}$, 4 , $\dot{6}$, 5 , ____ .

(17) $\dot{1}$, 4 , $\dot{2}$, 5 , $\dot{3}$, 6 , $\dot{4}$, ____ .

(18) , ____ .

(19) , ____ .

(20) 1 , 5 , 4 , 8 , 7 , 11 , ____ .

1.2

name date

Break time

Find the missing number in each number series

Example 2, 4, 6, 8

Column A

1, 3, 5, 7, 9, _____

16, 15, 14, 13, 12, _____

1, 4, 7, 10, 13, 16, _____

25, 20, 15, 10, _____

20, 17, 14, 11, 8, _____

.22, .20, .18, .16, .14, _____

6, 6, 8, 8, 8, 10, 10, 10, _____

2, 4, 8, 16, 32, _____

160, 80, 40, 20, 10, _____

3, 2, 1, 0, −1, −2, _____

Column B

5, 6, 8, 11, 15, _____

1, 4, 5, 8, 9, 12, _____

5, 2, 10, 2, 15, 2, _____

$\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \frac{1}{32},$ _____

$\sqrt{25}, \sqrt{16}, \sqrt{9},$ _____

2, 5, 7, 10, 12, 15, _____

100, 81, 64, 49, 36, _____

$\frac{1}{256}, \frac{1}{128}, \frac{1}{64}, \frac{1}{32},$ _____

2, 5, 11, 23, 47, _____

0, 1, 3, 6, 10, 15, 21, _____

K. Math Grade Placement

TABLE OF CONTENTS

(● = Individual or Group Written Response)

		Page
Introduction		127
K-1	●Computational Skills Grade Placement	128
K-2	●Math Comprehension Grade Placement	130

THE PURPOSE OF THE ASSESSMENTS IN THIS SECTION: The "Math Grade Placement" assessments in this section have been included in the *Inventory* as a means to assess a student's computational and comprehension skills. The results then may be used for one or more of the purposes listed below.

1. **Screening:** Students scoring below a locally established grade level may be referred for additional assessment.

   Students receiving a grade placement of eighth grade or above on these grade placement assessments have probably mastered most of the essential skills assessed by this *Inventory* and would be expected to perform well in beginning high school math courses.

2. **Determining at What Level the Assessment of Specific Skills Assessed in the Following Sections Should Be Initiated:** It is recommended that the assessment of specific skills be initiated with skills that are indicated as one grade level below the grade level the student obtains on the "Computational Skills Grade Placement" assessment. For example, if the student scores fifth grade, the assessment of specific skills might more appropriately be continued from those skills that are usually taught at the fourth grade level.

METHODS OF ASSESSMENT: All assessment procedures and materials in this section can be used for either individuals or groups or both.

The student pages may be duplicated to respond to written assessments.

An alternate method of assessing an individual is the quicker, oral response. This method is particularly useful for the student who most likely has the skills being reviewed as well as for the student whose writing competency may inhibit accurate responses.

For purposes of the "Math Comprehension Grade Placement" assessment, the reading grade level is lower than the grade level of the computational skills required to compute the word problems. Students with special needs may need and should receive help with reading words in the comprehension problems.

TWO FORMS: Two Forms, A and B, are included. Either Form may be used if only one assessment is to be made. One Form may be used for a pretest and the alternate Form for the post test, if needed.

COMPOSITION OF GRADE PLACEMENT: The "Computational Skills Grade Placement" assessment is composed of four computational exercises that require the skills and have the complexity of exercises commonly found in math texts for each grade level two through eight.

The "Math Comprehension Grade Placement" assessment is composed of three comprehension problems that require the skills and have the complexity of problems commonly found in math texts for each grade level two through eight.

NOTE: In exercises involving division, accept any remainder form that is standard in your area.

GRADE LEVELS OF SKILLS: The red numerals found on the teacher's pages in the skill analysis or in the student page format sections of the assessments are included to indicate the grade level of the skills.

A grade level numeral sometimes appears in front of a described skill to show that the skill is normally introduced and taught at this grade level. A numeral may appear after a skill description to show that the skill is normally achieved by the end of this grade level.

Your local standards and expectations should always take precedence in your use of these designations.

DIRECTIONS: Write the answer for each exercise. Be sure to do as the signs tell you. Do as many of the exercises as you can.

NAME: _____

1.a. $\begin{array}{r} 6 \\ +9 \\ \hline \end{array}$	b. $\begin{array}{r} 27 \\ -15 \\ \hline \end{array}$	c. $\begin{array}{r} 6 \\ 8 \\ +4 \\ \hline \end{array}$	d. $\begin{array}{r} 69 \\ -27 \\ \hline \end{array}$
2.a. $\begin{array}{r} 583 \\ +792 \\ \hline \end{array}$	b. $\begin{array}{r} 32 \\ -16 \\ \hline \end{array}$	c. $\begin{array}{r} 23 \\ \times\ 2 \\ \hline \end{array}$	d. $6\overline{)24}$
3.a. $\begin{array}{r} 6324 \\ -2468 \\ \hline \end{array}$	b. $\begin{array}{r} \frac{3}{5} \\ -\frac{1}{5} \\ \hline \end{array}$	c. $\begin{array}{r} 14 \\ \times\ 7 \\ \hline \end{array}$	d. $32\overline{)160}$
4.a. $\begin{array}{r} \frac{1}{5} \\ +\frac{1}{2} \\ \hline \end{array}$	b. $\begin{array}{r} 5002 \\ -1378 \\ \hline \end{array}$	c. $\begin{array}{r} 273 \\ \times\ 56 \\ \hline \end{array}$	d. $50\overline{)910}$
5.a. $\begin{array}{r} 7\frac{1}{4} \\ +2\frac{5}{8} \\ \hline \end{array}$	b. $\begin{array}{r} 30. \\ -\ 2.2 \\ \hline \end{array}$	c. $6 \times 1\frac{1}{2} =$	d. $5\frac{1}{3} \div \frac{1}{3} =$
6.a. $\begin{array}{r} 2 \text{ ft. } 5 \text{ in.} \\ +1 \text{ ft. } 9 \text{ in.} \\ \hline \end{array}$	b. $\begin{array}{r} .36 \\ -.262 \\ \hline \end{array}$	c. $\begin{array}{r} 100 \\ \times .015 \\ \hline \end{array}$	d. $7\overline{)49.8}$
7.a. $\begin{array}{r} 4 \text{ yd. } 1 \text{ ft. } 2 \text{ in.} \\ +2 \text{ yd. } 2 \text{ ft. } 6 \text{ in.} \\ \hline \end{array}$	b. $\begin{array}{r} 9.7 \\ -5\frac{3}{5} \\ \hline \end{array}$	c. $\begin{array}{r} .004 \\ \times .008 \\ \hline \end{array}$	d. $12.4 \div \frac{2}{5} =$

©1991 Curriculum Associates, Inc. Inventory of Essential Skills

DIRECTIONS: Read the following math word problems. Do as many of them as you can. You may use scratch paper to work out the problems. Write your answers on the lines provided.

NAME: _____

1.a. Hans worked 7 hours one day and 6 hours another day. How many hours did he work? _____hours

b. Betty worked 28 hours. Ernesto worked 32 hours. How many more hours did Ernesto work than Betty? _____hours

c. Eli played baseball 6 hours one day and 8 hours on another day. How many hours did he play baseball? _____hours

2.a. The Le Blanc family traveled 561 miles the first day and 472 miles the second day. How many miles did they travel? _____miles

b. Mike gets $12 each week for working after school. How much does he get for working three weeks? $_____

c. Sarah was in school 6 hours for 5 days a week. How many hours was she at school in a week? _____hours

3.a. Marta got $144 for working 36 hours. How much did she get for each hour? $_____

b. Ramon had $21.45. He spent $19.95. How much does he have left? $_____

c. Nora's mother gave her $44.50 to go shopping. Nora spent some of it and has $19.00 left. How much did she spend? $_____

4.a. It rained ¼ inch on Monday and ½ inch on Tuesday. How much did it rain on both days? _____inches

b. Michelle gets $3.65 per hour at her work. One week she worked 37 hours. How much money should she be paid for the week? $_____

c. Dolores drinks 6 apple juices a day. Each six-pack of apple juice costs $1.95. How much money would Dolores spend for a 7-day supply of apple juice? $_____

5.a. Morris is driving 30 miles on a trip. He has driven 6.7 miles. How many more miles does he have left to drive? _____miles

b. Ali worked 1½ hours each day for five days. How many hours did she work during the five days? _____hours

c. Brendan taped records 1¼ hours one evening, 2½ hours on the second evening, and 45 minutes on the third evening. How many hours did Brendan tape records? _____hours

6.a. It rained 1.1 inches on Wednesday and .75 inches on Thursday. How much more did it rain on Wednesday than on Thursday? _____inches

b. A turkey is to cook for 2½ hours. It has been cooking for one hour and 55 minutes. How much longer will it need to cook? _____minutes

c. Lynn bought a bicycle for $128.00. She put a 25% down payment on it. How much does she owe? $_____

7.a. A board is 2 yards 2 feet and 3 inches long. Another board is 1 yard 2 feet and 8 inches. How long are both of the boards? ___yd. ___ft. ___in.

b. It takes Sam 15 minutes to pack a box. How many boxes can he pack in 5.5 hours? _____boxes

c. One month running shorts sold for $6.95. Next month they will be increased by 8%. How much will they cost? $_____

©1981 -Curriculum Associates, Inc. *Inventory of Essential Skills*

COMPUTATIONAL SKILLS GRADE PLACEMENT—FORM A

SKILL: Adds, subtracts, multiplies, and divides at grade level (two through eight). (This assessment may be used to determine the grade level at which additional assessment may be appropriate.)

STUDENT RECORD BOOK: Page 14.

ASSESSMENT METHODS: Individual or group written response.

MATERIALS: Copy of S-128—Form A and a pencil. Scratch paper should be available if requested by the student.

DISCONTINUE: After determining the highest grade level at which the student computes no more than one of the four exercises and/or when it appears the student has had as much time as he or she can use profitably.

TIME: Approximately five to fifteen minutes.

ACCURACY: At least three of the four exercises for each grade level must be correct to receive credit for that grade level.

DIRECTIONS: This assessment is made by asking the student to write the answers to as many of the exercises on Form A or Form B as possible.

After determining which Form will be used, present each student with a copy of the Form and a pencil. Read the **DIRECTIONS** on the student page.

Say: **Write the answer for each exercise. Be sure to do as the signs tell you. Do as many of the exercises as you can.**

Give help understanding the **DIRECTIONS**, if needed. The student may use scratch paper.

GRADE LEVELS AND ANSWERS FOR S-128—FORM A

Second Grade			
1.a. 15	b. 12	c. 18	d. 42
Third Grade			
2.a. 1,375	b. 16	c. 46	d. 4
Fourth Grade			
3.a. 3,856	b. 2/5	c. 98	d. 5
Fifth Grade			
4.a. 7/10	b. 3,624	c. 15,288	d. 18.2 or 18 r 10
Sixth Grade			
5.a. 9 7/8	b. 27.8	c. 9	d. 16
Seventh Grade			
6.a. 4 ft. 2 in.	b. .098	c. 1.5	d. 7.114 or 7.11
Eighth Grade			
7.a. 7 yd. 8 in.	b. 4.1	c. .000032	d. 31

MATH COMPREHENSION GRADE PLACEMENT—FORM A

SKILL: Comprehends and computes problems at grade level (two through eight). (This assessment may be used to determine grade level at which additional assessment may be appropriate.)

STUDENT RECORD BOOK: Page 14.

ASSESSMENT METHODS: Individual or group written response.

MATERIALS: Copy of S-130—Form A and a pencil. Scratch paper should be available if requested by the student.

DISCONTINUE: After determining the highest grade level at which the student misses two of the three word problems and/or when it appears the student has had as much time as he or she can use profitably.

TIME: Approximately five to fifteen minutes.

ACCURACY: At least two of the three word problems for each grade level must be correct. Give credit for the highest grade level for which at least two of the three word problems are solved correctly.

DIRECTIONS: This assessment is made by asking the student to solve as many of the word problems on Form A or Form B as possible.

After determining which Form will be used, present each student with a copy of the Form, a pencil, and a sheet of scratch paper. Read the **DIRECTIONS**.

Say: **Read the following math word problems. Do as many of them as you can. You may use scratch paper to work out the problems. Write your answers on the lines provided.**

Give help understanding the **DIRECTIONS**, if needed. Provide any help the student may need reading the word problems.

GRADE LEVELS AND ANSWERS FOR S-130—FORM A

1. **Second Grade**
   a. 13 hours
   b. 4 hours
   c. 14 hours
2. **Third Grade**
   a. 1,033 miles
   b. $36
   c. 30 hours
3. **Fourth Grade**
   a. $4
   b. $1.50
   c. $25.50
4. **Fifth Grade**
   a. 3/4 inches
   b. $135.05
   c. $13.65
5. **Sixth Grade**
   a. 23.3 miles
   b. 7 1/2 hours
   c. 4 1/2 hours
6. **Seventh Grade**
   a. .35 inches
   b. 35 minutes
   c. $96.00
7. **Eighth Grade**
   a. 4 yd. 1 ft. 11 in.
   b. 21 boxes
   c. $7.51

M-69

DIRECTIONS: Write the answer for each exercise. Be sure to do as the signs tell you. Do as many of the exercises as you can.

NAME: _____

1. a. $\begin{array}{r} 7 \\ +8 \\ \hline \end{array}$	b. $\begin{array}{r} 18 \\ -12 \\ \hline \end{array}$	c. $\begin{array}{r} 5 \\ 7 \\ +9 \\ \hline \end{array}$	d. $\begin{array}{r} 78 \\ -12 \\ \hline \end{array}$
2. a. $\begin{array}{r} 782 \\ +591 \\ \hline \end{array}$	b. $\begin{array}{r} 41 \\ -27 \\ \hline \end{array}$	c. $\begin{array}{r} 12 \\ \times\ 3 \\ \hline \end{array}$	d. $5\overline{)25}$
3. a. $\begin{array}{r} 7415 \\ -3589 \\ \hline \end{array}$	b. $\begin{array}{r} \frac{4}{5} \\ -\frac{1}{5} \\ \hline \end{array}$	c. $\begin{array}{r} 15 \\ \times 18 \\ \hline \end{array}$	d. $24\overline{)168}$
4. a. $\begin{array}{r} \frac{1}{4} \\ +\frac{1}{2} \\ \hline \end{array}$	b. $\begin{array}{r} 4001 \\ -2379 \\ \hline \end{array}$	c. $\begin{array}{r} 365 \\ \times\ 47 \\ \hline \end{array}$	d. $40\overline{)870}$
5. a. $\begin{array}{r} 7\frac{1}{2} \\ +3\frac{3}{8} \\ \hline \end{array}$	b. $\begin{array}{r} 20. \\ -\ 1.1 \\ \hline \end{array}$	c. $7 \times 2\frac{1}{2} =$	d. $6\frac{1}{4} \div \frac{1}{4} =$
6. a. $\begin{array}{r} 1 \text{ pt. } 8 \text{ oz.} \\ +1 \text{ pt. } 9 \text{ oz.} \\ \hline \end{array}$	b. $\begin{array}{r} .47 \\ -.184 \\ \hline \end{array}$	c. $\begin{array}{r} 100 \\ \times .069 \\ \hline \end{array}$	d. $8\overline{)64.9}$
7. a. $\begin{array}{r} 5 \text{ yd. } 1 \text{ ft. } 1 \text{ in.} \\ +2 \text{ yd. } 2 \text{ ft. } 8 \text{ in.} \\ \hline \end{array}$	b. $\begin{array}{r} 7.3 \\ -4\frac{2}{5} \\ \hline \end{array}$	c. $\begin{array}{r} .006 \\ \times .005 \\ \hline \end{array}$	d. $13.5 \div \frac{3}{4} =$

©1981 Curriculum Associates, Inc. Inventory of Essential Skills

COMPUTATIONAL SKILLS GRADE PLACEMENT—FORM B

SKILL: Adds, subtracts, multiplies, and divides at grade level (two through eight). (This assessment may be used to determine grade level at which additional assessment may be appropriate.)

STUDENT RECORD BOOK: Page 14.

ASSESSMENT METHODS: Individual or group written response.

MATERIALS: Copy of S-129—Form B and a pencil. Scratch paper should be available if requested by the student.

DISCONTINUE: After determining the highest grade level at which the student computes no more than one of the four exercises and/or when it appears the student has had as much time as he or she can use profitably.

TIME: Approximately five to fifteen minutes.

ACCURACY: At least three of the four exercises for each grade level must be correct to receive credit for that grade level.

DIRECTIONS: This assessment is made by asking the student to write the answers to as many of the exercises on Form A or Form B as possible.

After determining which Form will be used, present each student with a copy of the Form and a pencil. Read the **DIRECTIONS** on the student page.

Say: **Write the answer for each exercise. Be sure to do as the signs tell you. Do as many of the exercises as you can.**

Give help understanding the **DIRECTIONS**, if needed. The student may use scratch paper.

GRADE LEVELS AND ANSWERS FOR S-129—FORM B

Second Grade			
1.a. 15	b. 6	c. 21	d. 66
Third Grade			
2.a. 1,373	b. 14	c. 36	d. 5
Fourth Grade			
3.a. 3,826	b. 3/5	c. 270	d. 7
Fifth Grade			
4.a. 3/4	b. 1,622	c. 17,155	d. 21 r 30 or 21 3/4
Sixth Grade			
5.a. 10 7/8	b. 18.9	c. 17 1/2	d. 25
Seventh Grade			
6.a. 3 pt. 1 oz.	b. .286	c. 6.9	d. 8.1125 or 8.11
Eighth Grade			
7.a. 8 yd. 9 in.	b. 2.9 or 2 9/10	c. .000030	d. 18

(K-1)
OBJECTIVE: By ____(date)____, when presented with four written computational exercises commonly introduced in math texts at the _____ grade level, ____(student's name)____ will compute the correct answers for at least three of the four exercises.

DIRECTIONS: Read the following math word problems. Do as many as you can. You may use scratch paper to work out the problems. Write your answers on the lines provided.

NAME: _____

1.a. Helga worked 6 hours on Monday, 5 hours on Tuesday, and 3 hours on Wednesday. How many hours did she work? _____hours

b. José had $19 and spent $12. How many dollars did he have left? $_____

c. Mother bought 12 doughnuts for breakfast. After breakfast there were 3 doughnuts left. How many doughnuts were eaten? _____doughnuts

2.a. Yoko got $28 for working 7 hours. How much was she paid for each hour? $_____

b. Tom's truck goes 13 miles on 1 gallon of gas. How far can he go on 3 gallons of gas. _____miles

c. Uncle Mark ran 4 miles a day for 4 days. How many miles did he run in 4 days. _____miles

3.a. The White family took a trip across the United States of 2,451 miles. In 3 days they drove 1,786 miles. How many more miles did they have to drive? _____miles

b. Stamps cost 15 cents each. How much will 13 stamps cost? $_____

c. Twenty students saved $200 for their class trip. If each student saved the same amount, how much did each student save? $_____

4.a. Elsa can drive 30 miles on one gallon of gasoline. How many gallons will she need to drive 270 miles? _____gallons

b. Carmen bought a dress that cost $24.42 including tax. She gave the clerk $40.00. How much change should she get back? $_____

c. Karl rode his bicycle 5 7/10 miles to the beach. On the way home he rode 6 1/2 miles. How many miles did he ride? _____miles

5.a. Liz worked 2 1/2 hours each day for 6 days. How many hours did she work? _____hours

b. Kim worked 3 1/2 hours on Friday and 7 3/4 hours on Saturday. How many hours did he work? _____hours

c. Aunt Beth bought 1 3/8 yards of blue ribbon and 1/2 yards of green ribbon. How much more blue ribbon was bought? _____yards

6.a. A car travels 16.25 miles on each gallon of gas. How many miles will it travel on 100 gallons? _____miles

b. For mixing a spray to kill weeds, Howard is to use 2 1/2 tablespoons for each gallon of water. How many tablespoons of the spray will he need to use for 5 gallons of water. _____tablespoons

c. Joan received a 15% discount for clothing. If a suit cost $90, how much did she pay for it? $_____

7.a. A board is 3 yards long. How much should be cut or sawed off so it will be 6 feet and 2 inches long? ___ft. ___in.

b. The price of candy is 36 cents for 4 ounces. How much will 1.5 pounds cost? $_____

c. Will bought a tennis racket on sale for $24.60. If the sale was 20% off, how much was the tennis racket originally? $_____

1981 Curriculum Associates, Inc. Inventory of Essential Skills

MATH COMPREHENSION GRADE PLACEMENT—FORM B

SKILL: Comprehends and computes problems at grade level (two through eight). (This assessment may be used to determine grade level at which additional assessment may be appropriate.)

STUDENT RECORD BOOK: Page 14.

ASSESSMENT METHODS: Individual or group written response.

MATERIALS: Copy of S-131—Form B and a pencil. Scratch paper should be available if requested by the student.

DISCONTINUE: After determining the highest grade level at which the student misses two of the three word problems and/or when it appears the student has had as much time as he or she can use profitably.

TIME: Approximately five to fifteen minutes.

ACCURACY: At least two of the three word problems for each grade level must be correct. Give credit for the highest grade level for which at least two of the three word problems are solved correctly.

DIRECTIONS: This assessment is made by asking the student to solve as many of the word problems on Form A or Form B as possible.

After determining which Form will be used, present each student with a copy of the Form, a pencil, and a sheet of scratch paper. Read the **DIRECTIONS.**

Say: **Read the following math word problems. Do as many as you can. You may use scratch paper to work out the problems. Write your answers on the lines provided.**

Give help understanding the **DIRECTIONS**, if needed. Provide any help the student may need reading the word problems.

GRADE LEVELS AND ANSWERS FOR S-131—FORM B

1. **Second Grade**
   a. 14 hours
   b. $7
   c. 9 doughnuts
2. **Third Grade**
   a. $4
   b. 39 miles
   c. 16 miles
3. **Fourth Grade**
   a. 665 miles
   b. $1.95
   c. $10
4. **Fifth Grade**
   a. 9 gallons
   b. $15.58
   c. 12 1/5 miles
5. **Sixth Grade**
   a. 15 hours
   b. 11 1/4 hours or 11 hours 15 minutes
   c. 7/8 yards
6. **Seventh Grade**
   a. 1625 miles
   b. 12 1/2 tablespoons
   c. $76.50
7. **Eighth Grade**
   a. 2 feet 10 inches
   b. $2.16
   c. $30.75

(K-2)
OBJECTIVE: By _____(date)_____, when presented with three written comprehension problems commonly introduced in math texts at the _____ grade level, _____(student's name)_____ will solve at least two of the three word problems.

M-73

SUBJECT: Mathematics LESSON TITLE: Introduction to the Learning Lab LESSON NUMBER: 1b

Objectives	Procedures	Materials
1. To show students location, equipment, procedures for using the Lab's audio-visual materials	1.1 Lab equipment should be prepared with Mathematics 200 Booklet, Fraction filmstrip (Understanding Essentials of Mathematics), Mini Course in Mathematics	
	1.2 Lab sheets for those students who already completed the inventory are passed out.	
2. To establish a comfort level in working with A/V materials	2.1 "Tour" conducted	
3. To aid students in scheduling a time in personal schedules for lab work		

M-74

SUBJECT: Mathematics LESSON TITLE: Basic Operations Review LESSON NUMBER: 2a

Objectives	Procedures	Materials
1. To introduce computing of the perimeter and area of straight sided figures as a way of reviewing + - x ÷	1.1 Begin with overhead of 4 sided figure calculate areas. Make assignment in exercise book.	1.1 Overhead 1.1 p. 92 Math Exercise Supplement
	1.2 Handout + - x ÷ table and discuss differences between + - and x ÷. Learn how to read chart.	1.2 + - x ÷ Table
2. To investigate the students' understanding of place value by teaching rounding off and estimating	2.1 Put multi digit number on board and discuss place value lead into rounding off.	
	2.2 Put problems on board and round off to estimate answers. Practice estimating division in book. Assignment: Rounding off sheet	2.2 Rounding off sheet 2.2 p. 19 - 20 Math Text 2.2 p. 27 Math Exercise Supplement 2.2 p. 36 + Math Exercise Supplement

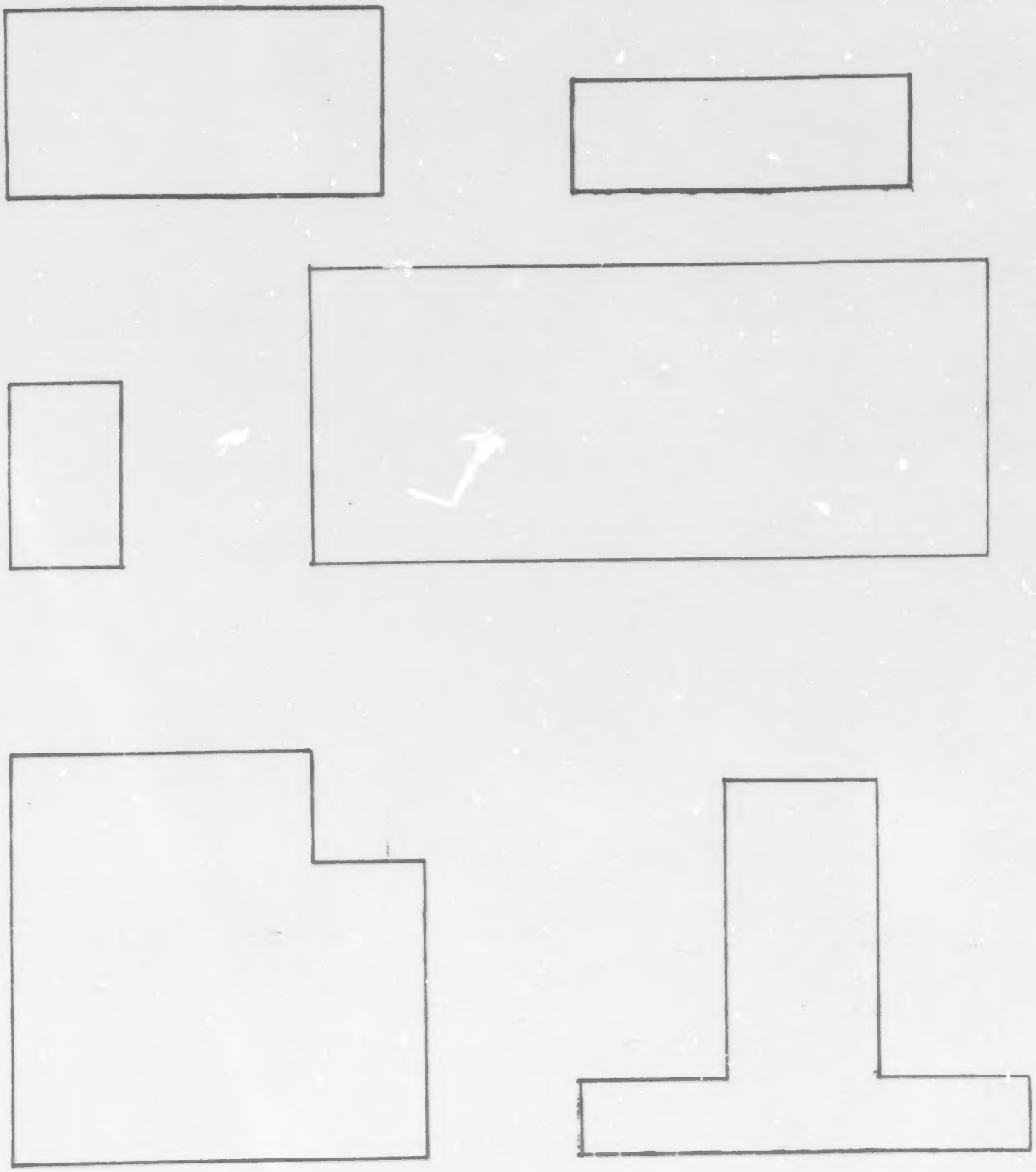
SUBJECT: Mathematics

LESSON TITLE: Basic Operations Review

LESSON NUMBER: 2a (Con't.)

Objectives	Procedures	Materials
puting an average	we might use averages. Present	
	formula for finding average.	
	Assignment: Averaging Sheet	

1.1



1.8

Self-Help Guide

Addition and Subtraction Facts

+	0	1	2	3	4	5	6	7	8	9	10
0	0	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10	11
2	2	3	4	5	6	7	8	9	10	11	12
3	3	4	5	6	7	8	9	10	11	12	13
4	4	5	6	7	8	9	10	11	12	13	14
5	5	6	7	8	9	10	11	12	13	14	15
6	6	7	8	9	10	11	12	13	14	15	16
7	7	8	9	10	11	12	13	14	15	16	17
8	8	9	10	11	12	13	14	15	16	17	18
9	9	10	11	12	13	14	15	16	17	18	19
10	10	11	12	13	14	15	16	17	18	19	20

Multiplication and Division Facts

× ÷	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

EXERCISES

In 1 to 8, round off each number to the nearest *ten*.

Sample solution

4(7) 50

1. 68 _____ 2. 84 _____ 3. 135 _____ 4. 324 _____
5. 5,048 _____ 6. 8,964 _____
7. 11,475 _____ 8. 18,388 _____

In 9 to 16, round off each number to the nearest *hundred*.

Sample solution

4(38) 400

9. 362 _____ 10. 538 _____ 11. 895 _____
12. 2,809 _____ 13. 5,243 _____
14. 8,556 _____ 15. 15,045 _____
16. 21,099 _____

In 17 to 24, round off each number to the nearest *thousand*.

Sample solution

8,(762) 9,000

17. 9,462 _____ 18. 6,548 _____
19. 3,817 _____ 20. 4,072 _____
21. 21,628 _____ 22. 41,314 _____
23. 35,089 _____ 24. 61,529 _____

In 25 to 32, round off each number to the nearest *ten-thousand*.

Sample solution

1(5,681) 20,000

25. 23,510 _____ 26. 15,010 _____
27. 94,215 _____ 28. 195,628 _____
29. 507,128 _____ 30. 704,852 _____
31. 5,246,117 _____ 32. 8,375,000 _____

Finding the Average or Mean

reference

People who collect statistics use the word *mean* as a synonym for the word *average*. To find the average, or mean, of a set of scores, you add all of the scores and divide by the number of scores.

$$\text{mean} = \frac{\text{total of scores}}{\text{number of scores}}$$

Example: Test scores: 50, 80, 70, 90, 75

$$\text{Mean} = \frac{50 + 80 + 70 + 90 + 75}{5} = \frac{365}{5} = 73$$

action

1 Your test scores in math are 80, 75, 65, 85, 85.
Find your average score.

_____

2 A salesperson's weekly earnings during April were $192, $295, $240, and $295.
Find the average weekly salary for April.

_____

3 The temperature for the past 12 days was recorded as follows:
85°, 65°, 70°, 85°, 85°, 90°, 80°, 85°, 70°, 75°, 70°, 64°.
What is the average temperature?

_____

4 The weights of a group of children are as follows: 75, 90, 100, 95, 78, 90, 90, 85, 75, 85, 90, 80, 75, 75.
What is the average weight of the group?

_____ lb.

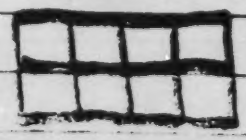
5 If Jean earned the following weekly salaries, what is her average salary? $52.50, $71.50, $63.50, $52.50, $68.50, $65.00, $58.25, $60.25

_____

SUBJECT: Mathematics

LESSON TITLE: Basic Operations Practice

LESSON NUMBER: 2b

Objectives	Procedures	Materials
1. To review addition and subtraction with carrying and borrowing; to review multiplication and long division.	1.1 Building upon place value, addition and subtraction problems will be demonstrated on the board.	1.1 Units I and II in Life Skills Math, as needed.
	- practice, as needed, in text book (must allude to adding $ with decimal point, since decimals have not been covered in class.	
	1.2 Using place value and estimating from previous lesson,	1.2 Life Skills Exercise Supplement Units I and II as needed.
	Drawings of figures divided into regions will be used to help the class understand the processes of multiplication and division	
	Ex: 	
	Multiplication is a "group"	

M-81

SUBJECT: Mathematics

LESSON TITLE: Basic Operations Practice

LESSON NUMBER: 2b (Con't.)

Objectives	Procedures	Materials
	taken a "group" of times 2 x 4	
	or 4 x 2	
	Division is an equal distribution	
	of a group. The division stipu-	
	lating the amount in each dis-	
	tribution.	

SUBJECT: Mathematics LESSON TITLE: Linear and Surface Measurement LESSON NUMBER: 3

Objectives	Procedures	Materials
1. To have the students develop the ability to convert among inches, feet and yards when computing linear measure and area.	1.1 Review A = l x w and how to find a perimeter.	1.1 Life Skills Math p. 76
	1.2 Label surface and linear measurement and have class generate list of work related tasks of measurement that fit each category.	1.2 Exercise Supplement p. 91
	1.3 Pass out measurement conversion table and discuss equal measures with length. Practice converting on board. Do p. 76 in book.	1.3 Measurement Conversion table
2. To report area measurement in square units.	2.1 Use pp. 77 & 78 in text - represent conversion with square units on board assignment: Exercise	2.1 Life Skills Math pp. 77 & 78

M-83

SUBJECT: Mathematics LESSON TITLE: Linear and Surface Measurement LESSON NUMBER: 3 (Con't.)

Objectives	Procedures	Materials
	Supplement p. 93	
		2.2 Exercise Supplement p. 93
3. To determine the conversion among inches, feet and yards in square units.	3.1 p. 79 in text	3.1 Life Skills Math p. 79
1 sq. ft. = 144 sq. in.		
1 sq. yd. = 9 sq. ft.		
4. To apply concepts of lesson to job related situation computing area from a floor plan.	4.1 Summary lesson with questions related to floor plan.	4.1 Overhead, copies of floor plan and questions.

1.3

APPENDIX

ENGLISH SYSTEM OF WEIGHTS AND MEASURES

Units of Length

12 inches (in.)	= 1 foot (ft.)
3 feet (ft.)	= 1 yard (yd.)
1,760 yards (yd.)	= 1 mile (mi.)
5,280 feet	= 1 mile

Units of Capacity

8 fluid ounces	= 1 cup
16 fluid ounces (fl. oz.)	= 1 pint (pt.)
2 pints (pt.)	= 1 quart (qt.)
4 quarts (qt.)	= 1 gallon (gal.)

Units of Weight (Mass)

16 ounces (oz.)	= 1 pound (lb.)
2000 pounds	= 1 ton

Units of Area

144 square inches	= 1 square foot
9 square feet	= 1 square yard

METRIC MEASURES OF LENGTH AND WEIGHT

Units of Length

10 millimeters (mm)	= 1 centimeter
10 centimeters (cm)	= 1 decimeter
100 centimeters	= 1 meter (m)
10 decimeters (dm)	= 1 meter
1000 meters (m)	= 1 kilometer (km)

Units of Capacity

1000 milliliters (mℓ)	= 1 liter (ℓ)
1000 liters	= 1 kiloliter (kℓ)
1 cubic centimeter (cm^3)	= 1 milliliter
1 cubic decimeter (dm^3)	= 1 liter

Units of Weight (Mass)

1000 milligrams (mg)	= 1 gram
1000 grams	= 1 kilogram (kg)
1000 kilograms	= 1 metric ton (t)
1 metric ton	= 1 megagram (mg)

Units of Area

100 square millimeters (mm^2) = 1 square centimeter (cm^2)

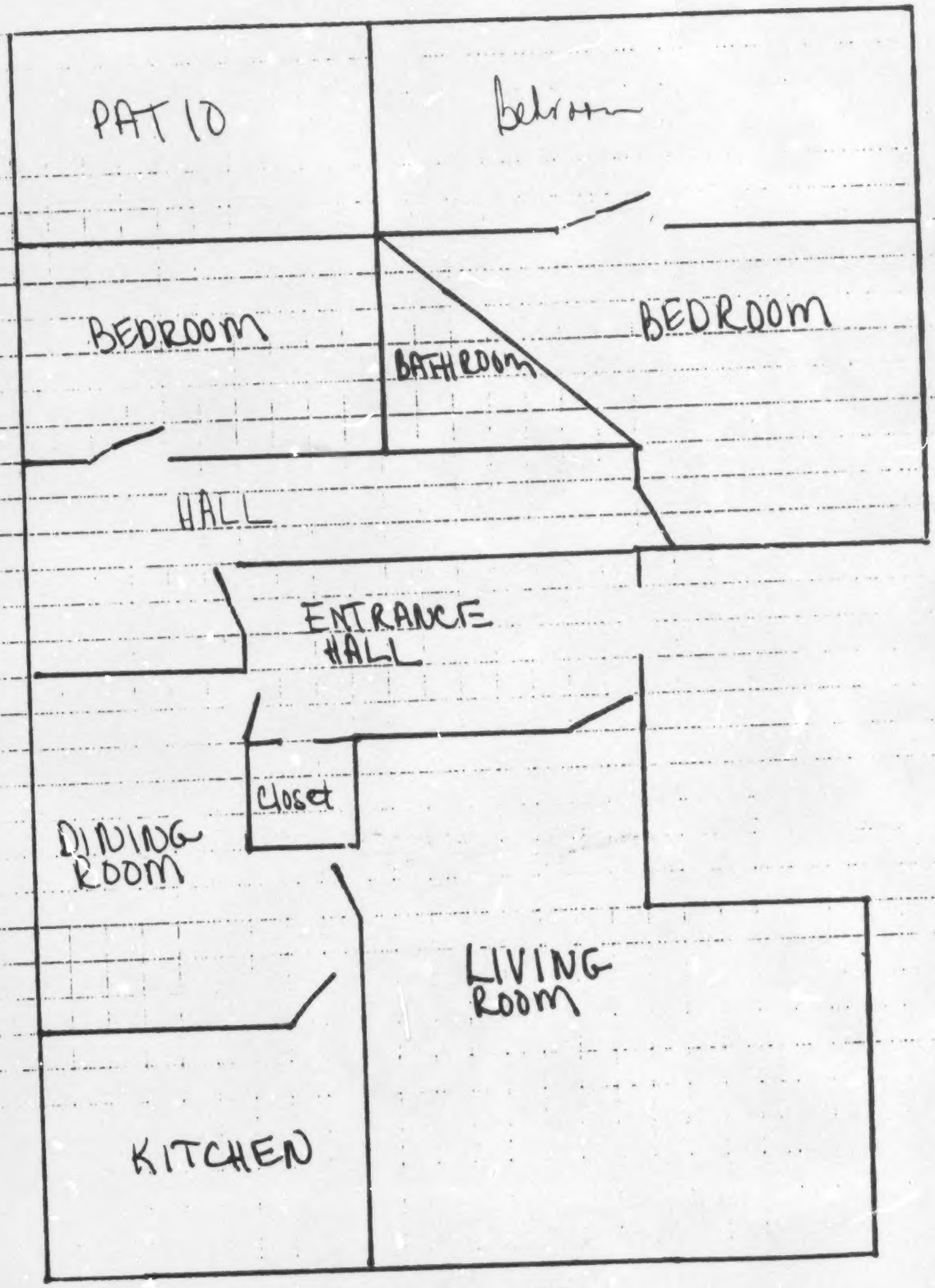
100 square centimeters = 1 square decimeter (dm^2)

100 square decimeters = 1 square meter (m^2)

METRIC AND ENGLISH UNIT EQUIVALENTS (APPROXIMATE)

1 centimeter	= .39 inch
1 meter	= 39.37 inch
1 kilometer	= .62 mile
1 inch	= 2.5 centimeters
1 yard	= .9 meter
1 mile	= 1.6 kilometers
1 kilogram	= 2.2 pounds
1 liter	= 1.1 quarts

4.1


PATIO
bedroom
BEDROOM
BATHROOM
BEDROOM
HALL
ENTRANCE HALL
Closet
DINING ROOM
LIVING ROOM
KITCHEN

10 = 1 ft

Refer to the scale when answering these questions.

1. What is the perimeter of the closet?

2. What is the area of the closet?

3. How much wood would be needed to cover one room floor? Give answer in yards as well.

4. Patio and kitchen are getting indoor-outdoor carpeting. How much? Molding around edge. How much? in both halls?

5. Someone donated 400 square feet of carpet. What rooms of the house could be covered and use up most amount of carpet?

6. What would you suggest re: bathroom?

7. How many 2 x 2 feet squares to cover PATIO?

8. How many 8 feet lengths needed to go around kitchen?

SUBJECT: Mathematics LESSON TITLE: Fractions - Introduction LESSON NUMBER: 4a

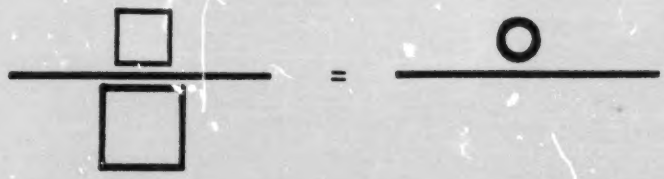
Objectives	Procedures	Materials
1. To introduce the concept of fraction to the class → define numerator and denominator.	1.1 Have students fill in blanks on overhead as motivation and to show format for fractions.	1.1 Fraction sequence overhead. 1.2 Overhead labeled $\frac{N}{D}$
	1.2 Discuss fraction line as division and label numerator and denominator - provide definition of each. - this serves to be a good time to introduce > < symbols so notation is easier.	
2. To write proper fractions, improper fractions and mixed numbers.	2.1 Using overheads, class practices writing fractions as a group as number of parts in whole is changed. - provide independent practice with sheets and book.	2.1 Overlapping overheads.

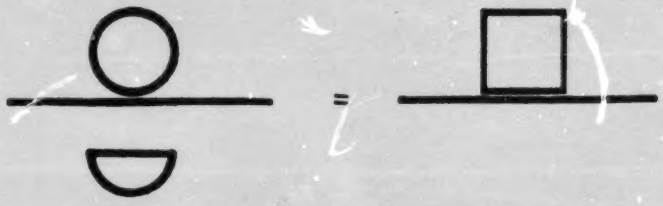
SUBJECT: Mathematics LESSON TITLE: Fractions - Introduction LESSON NUMBER: 4 a(Con't.)

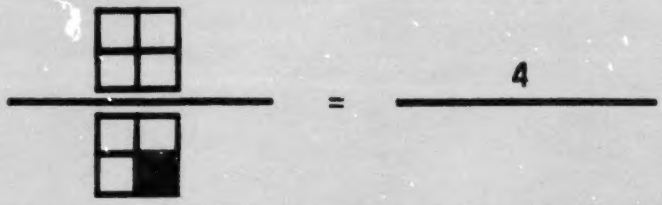
Objectives	Procedures	Materials
	2.2 Using region sheet with values	2.2 Practice region sheet with values
	greater than 1, introduce terms	less than 1
	Proper Fraction, Improper Fraction	2.2 Life Skills Math pp. 33 & 34
	and Mixed Number.	2.2 Practice region sheet with values
	- provide independent practice.	greater than 1.
3. To begin to develop the concept of	3.1 Using overheads again show how	3.1 Homework
equivalent fractions.	fractional parts can be labeled	Exercise Supplememt pp. 44 & 46
	differently dependent upon	
	number of parts in whole.	
	- have students practice with	
	different denominators on	
	board.	

LOGIC and COMPREHENSION

Directions: Each of the problems below is actually a statement, the first of which may be read, "Small square goes with large square as small circle goes with _____." In each case fill in the blank with what you consider the correct information to complete the statement.

(21) 

(22) 

(23) 

(24) $\frac{1+2}{12} = \frac{\quad}{AB}$

(25) $\frac{\text{Numerator}}{\text{Fraction}} = \frac{\text{Head}}{\quad}$

1.2

$$\frac{\text{Numerator}}{\text{Denominator}}$$

2.1

2.1

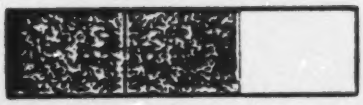
2.1

[redacted]

[redacted]

FRACTIONAL NUMBERS

Whole numbers are not the only numbers needed for measuring and computing. The number "two thirds" is not a whole number. It is a fractional number Here, it tells you what part of the whole region is red.



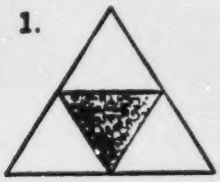
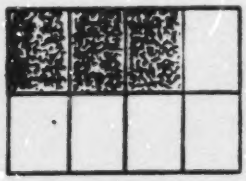
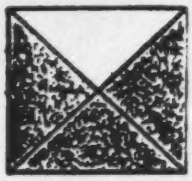
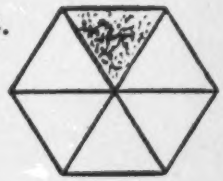
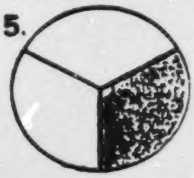
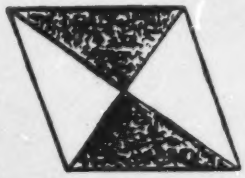
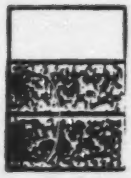
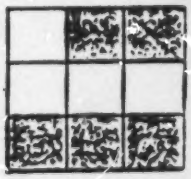
$\frac{2}{3}$ ← numerator
← denominator

A numeral for "two thirds" is $\frac{2}{3}$. It is called a fraction The number shown in the fraction that tells how many shaded parts there are is called the numerator The number that tells how many parts there are in all is called the denominator

29. Inventory Test

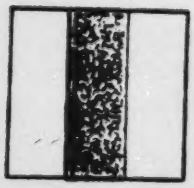
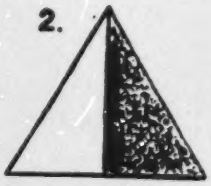
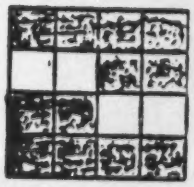
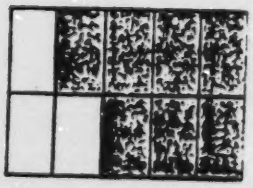
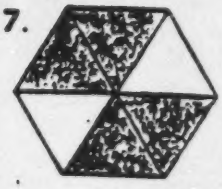
Naming Fractional Numbers

Write a fraction to tell what part of each region is shaded.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 

29A. Practice Set

Write a fraction to tell what part of each region is shaded.

1. 
2. 
3.
4. 
5. 
6.
7. 
8.

2.2

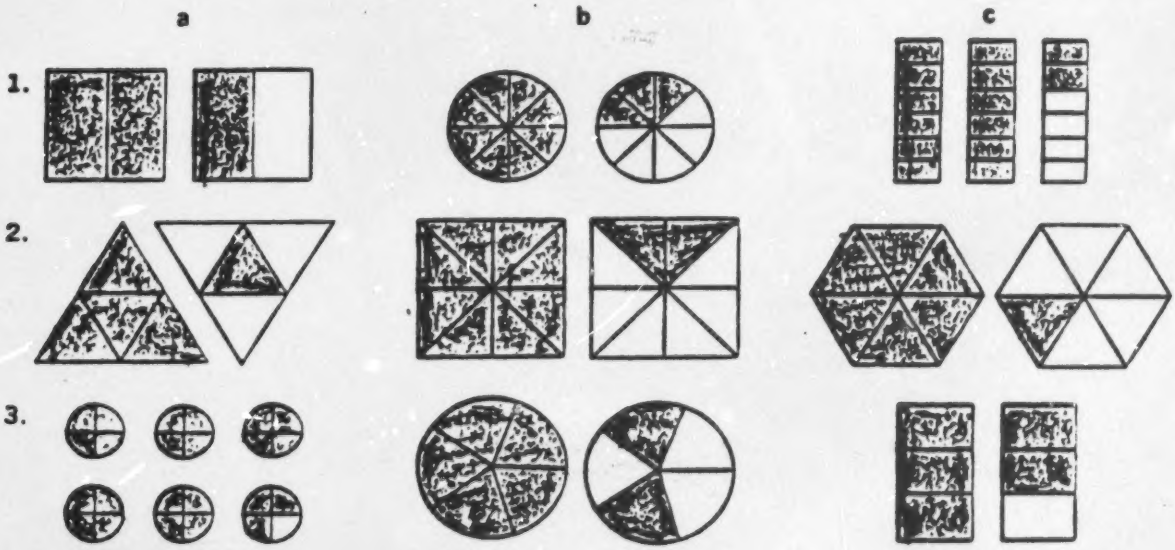
NAMING FRACTIONAL NUMBERS THAT ARE GREATER THAN ONE

Each circular region at the left is separated into fourths (4ths). The whole shaded region may be named as $1 + \frac{3}{4}$, or $1\frac{3}{4}$. A numeral such as $1\frac{3}{4}$ is called a mixed form; it can also be written as the fraction $\frac{7}{4}$.

33. Inventory Test

Naming Fractional Numbers Greater Than One

For each of the following, write both a mixed form and a fraction to name the shaded region.



41

SUBJECT: Mathematics | LESSON TITLE: Fractions (Con't) | LESSON NUMBER: 4b

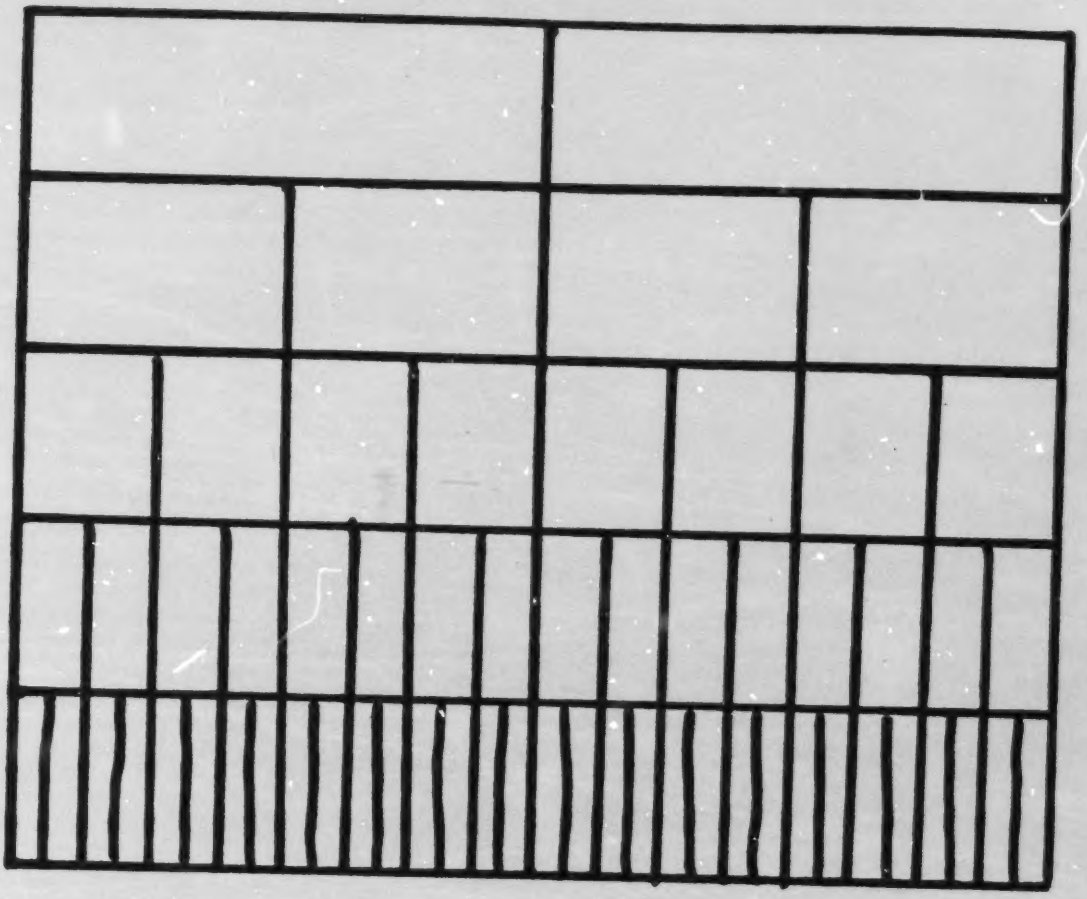
Objectives	Procedures	Materials
1. To review introductory lesson.	1.1 Using fraction overheads	1.1 - 1.2 Overheads with regions
	developing units into different	Ex:
	regions the class will review	Overheads are used, one
	numerator and denominator by	on top of another, to
	naming fractions.	show equivalent fractions.
	1.2 Review terms	
	Proper Fraction	
	Improper Fraction	
	Mixed Number using overheads	
	and class discussion.	
2. To continue the development of the	2.1 Demonstrate equivalent fractions	2.1 Handout - regions with halves,
concept of equivalent fractions.	visually and then introduce terms	fourths, etc.
	- Lower Terms	
	Higher Terms	2.2 Assign - Logic and Comprehension Sheet
3. To introduce the use of fractions	3.1 Pass out rulers, use overhead of	3.1 Rulers

SUBJECT: Mathematics LESSON TITLE: Fractions (Con't.) LESSON NUMBER: 4b

Objectives	Procedures	Materials
in measurement.	inch divided into 8ths, and	3.2 Overhead of inches divided into
	lesson in book to discuss and	eighths.
	demonstrate the inch as a unit	3.3 Simple Measuring Skills Sheets.
	and parts of an inch.	
		3.4 Life Skills p. 35

M-99

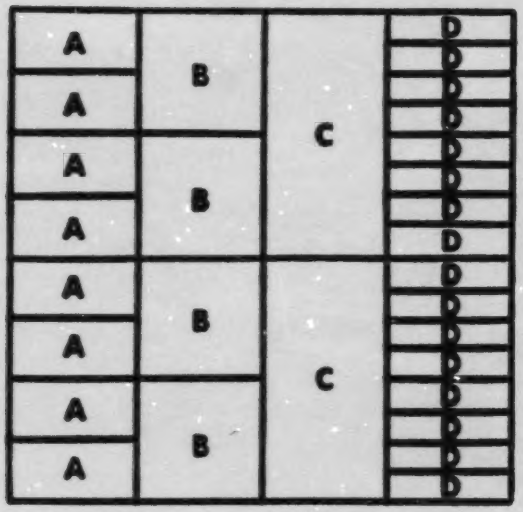
21



2.2

LOGIC and COMPREHENSION

Directions: Study carefully the figure below. Write your answers to questions 11 through 15 in the spaces provided.



(11) What fraction of the chart does 1/2 of the B's plus 1/2 of the A's equal?

Answer _____ .

(12) 4 A's plus 2 C's equal what fraction of the chart?

Answer _____ .

(13) What fraction of the chart does 12 D's plus 1 B equal?

Answer _____ .

(14) Take 4 A's and 1 C out of the chart. How much is left?

Answer _____ .

(15) If the entire chart is divided into squares the size of 2 A's how many squares would there be?

Answer _____ .

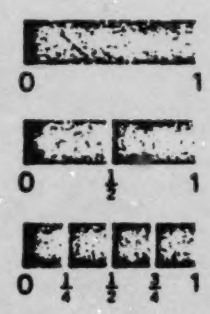
name date

simple measuring skills job 2

Linear Measure

reference

This unit of length is 1 inch.
When 1 inch is divided into 2 equal parts, each part is $\frac{1}{2}$ inch.
When 1 inch is divided into 4 equal parts, each part is $\frac{1}{4}$ inch.



action

Answer the questions about the ruler.

1 When 1 inch is divided into 8 equal parts, how long is each part? _____

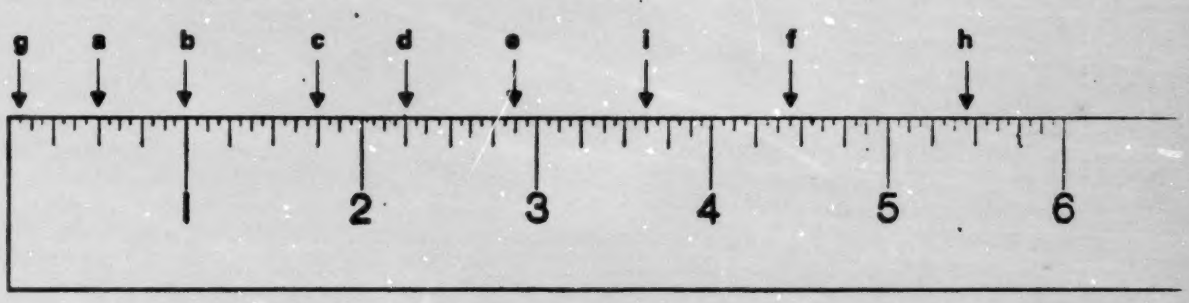
2 Each letter shown above the ruler is how far from the beginning of the ruler?

a	d	g	j
b	e	h	k
c	f	i	l

Linear Measure

3 When 1 inch is divided into 16 equal parts, how long is each part? _____

4 Each letter shown above the ruler is how far from the beginning of the ruler?



a	d	g
b	e	h
c	f	i

5 Use a ruler to find the length of each line segment to the nearest $\frac{1}{16}$ inch.
Write the measurement above each line.

a _____

b _____

c _____

d _____

e _____

f _____

g _____

Which line is the longest? _____

Which line is the shortest? _____

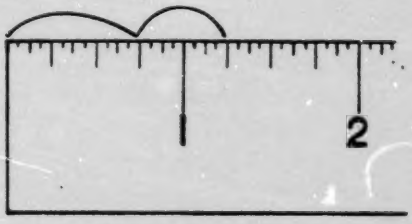
CHECKPOINT

Reference — Adding Fractions

Knowing how to add fractions is necessary for the work ahead. Here are two ways to add $\frac{3}{4}$ and $\frac{1}{2}$. One is the ruler method, and the other is the lowest common denominator method.

Ruler Method

$\frac{3}{4} + \frac{1}{2} = 1\frac{1}{4}$



Lowest Common Denominator Method

$\frac{3}{4} + \frac{1}{2} = ?$

The lowest common denominator (L.C.D.) is 4.

$\frac{3}{4} + \frac{2}{4} = \frac{5}{4} = 1\frac{1}{4}$

Action

Choose the method you prefer and solve each problem.

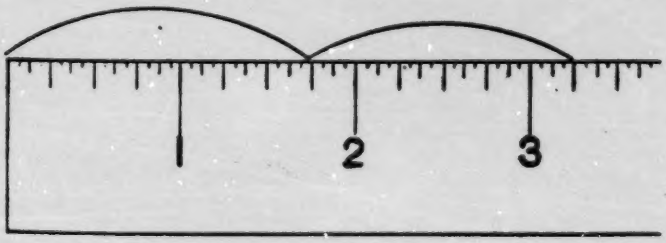
1 $\frac{1}{2} + \frac{1}{4} =$	9 $\frac{1}{8} + \frac{1}{2} =$
2 $\frac{1}{4} + \frac{1}{2} =$	10 $\frac{1}{4} + \frac{3}{8} =$
3 $\frac{3}{4} + \frac{1}{4} =$	11 $\frac{3}{16} + \frac{1}{8} =$
4 $\frac{3}{4} + \frac{1}{2} =$	12 $\frac{5}{16} + \frac{3}{16} =$
5 $\frac{5}{8} + \frac{3}{8} =$	13 $\frac{3}{16} + \frac{3}{8} =$
6 $\frac{1}{2} + \frac{5}{8} =$	14 $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} =$
7 $\frac{3}{4} + \frac{3}{8} =$	15 $\frac{1}{16} + \frac{1}{8} + \frac{1}{4} + \frac{1}{2} =$
8 $\frac{3}{8} + \frac{3}{16} =$	16 $\frac{7}{16} + \frac{3}{4} + \frac{5}{8} + \frac{1}{2} =$

Reference

You can also use either the ruler method or the L.C.D. method to add $1\frac{3}{4}$ and $1\frac{1}{2}$.

Ruler Method

$1\frac{3}{4} + 1\frac{1}{2} = 3\frac{1}{4}$



L.C.D. Method

$1\frac{3}{4} + 1\frac{2}{4} = ?$

$1\frac{3}{4} + 1\frac{2}{4} = 2\frac{5}{4} = 2 + 1\frac{1}{4} = 3\frac{1}{4}$

Action

Choose the method you prefer and solve each problem.

1 $2\frac{3}{4} + 1\frac{1}{2} =$
2 $1\frac{1}{4} + 2\frac{7}{8} =$
3 $3\frac{1}{8} + 1\frac{3}{4} =$
4 $1\frac{7}{8} + 1\frac{5}{8} =$
5 $2\frac{3}{4} + 1\frac{5}{8} =$
6 $1\frac{1}{2} + 3\frac{3}{4} + 2\frac{3}{4} =$

SUBJECT: Mathematics LESSON TITLE: Fractions - Addition and Subtraction LESSON NUMBER: 5

Objectives	Procedures	Materials
1. To apply the use of equivalent fractions in adding and subtracting fractions with unlike denominators. This necessitates review of the following:	1.1 Check regions homework in class - use logic sheet overhead - stress way to rename fractions inside unit.	1.1 Logic Sheet and overhead (See previous lesson)
1. Renaming fractions in lower and higher terms.	1.2 Pass out and do logic sheet and reducing fractions - provide additional examples on board if necessary	1.2 Logic sheet and overhead on reading fractions.
2. Adding and subtracting fractions with unlike denominators.	1.3 Check measurement homework. Discuss another way of adding and subtracting unlike fractions. Introduce term Least Common Denominator and ways to find	1.3 Fraction discs from Milton-Bradley to illustrate equivalent fractions.
	2.1 Pass out two page sheet for homework and assigh work in	2.1 Sheets on addition and subtraction of fractions.

M-105

SUBJECT: Mathematics LESSON TITLE: Fractions - Addition and Subtraction LESSON NUMBER: 5 (Con't.)

Objectives	Procedures	Materials
	exercise book.	
		2.2 Exercise Booklet finish through
		Ex. 30.

1.2

LOGIC and COMPREHENSION

Directions: In problems 1 to 5 below study figures a, b, c, and d. Decide which item is most like the item at the left and check the box showing your choice.

1. $\frac{45}{60}$

   ☐ a. $\frac{3}{5}$ ☐ b. $\frac{5}{6}$

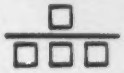
   ☐ c. $\frac{3}{4}$ ☐ d. $\frac{4}{5}$

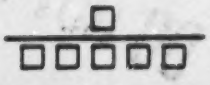
2. $\frac{24}{40}$

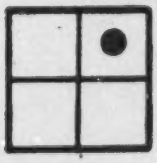
   ☐ a. $\frac{3}{5}$ ☐ b. $\frac{5}{6}$

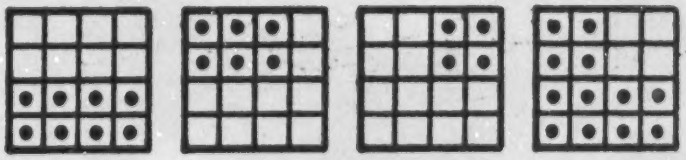
   ☐ c. $\frac{3}{4}$ ☐ d. $\frac{4}{5}$

3.

   ☐ a. ☐ b. 

   ☐ c.  ☐ d.

4. 

   ☐ a. ☐ b. ☐ c. ☐ d.

5. $\frac{6}{8} + \frac{3}{4}$

   ☐ a. 1 ☐ b. 2

   ☐ c. 3 ☐ d. 4

Fill in the missing numerators.

1. $\frac{1}{2} = \frac{\ }{4}$ $\quad \frac{1}{3} = \frac{\ }{6}$ $\quad \frac{1}{5} = \frac{\ }{10}$ $\quad \frac{2}{3} = \frac{\ }{6}$ $\quad \frac{5}{9} = \frac{\ }{18}$ $\quad \frac{3}{4} = \frac{\ }{16}$

2. $\frac{1}{7} = \frac{\ }{21}$ $\quad \frac{3}{8} = \frac{\ }{16}$ $\quad \frac{4}{5} = \frac{\ }{20}$ $\quad \frac{3}{4} = \frac{\ }{24}$ $\quad \frac{5}{2} = \frac{\ }{18}$

Reduce these fractions to lowest terms.

1. $\frac{6}{12} = \frac{\ }{2}$ $\quad \frac{4}{8} = \frac{\ }{2}$ $\quad \frac{6}{9} = \frac{\ }{3}$ $\quad \frac{6}{14} = \frac{\ }{7}$ $\quad \frac{6}{15} = \frac{\ }{5}$ $\quad \frac{9}{12} = \frac{\ }{4}$

2. $\frac{6}{8} =$ $\quad \frac{8}{12} =$ $\quad \frac{7}{14} =$ $\quad \frac{21}{63} =$ $\quad \frac{9}{18} =$ $\quad \frac{12}{24} =$

Add and reduce to lowest terms.

1. $\frac{2}{9} + \frac{2}{3}$ $\quad \frac{1}{10} + \frac{4}{5}$ $\quad \frac{1}{2} + \frac{1}{3}$ $\quad \frac{4}{10} + \frac{1}{3}$ $\quad \frac{1}{4} + \frac{1}{3}$ $\quad \frac{2}{3} + \frac{1}{12}$

2. $\frac{2}{6} + \frac{1}{15}$ $\quad \frac{1}{8} + \frac{1}{3}$ $\quad \frac{3}{5} + \frac{2}{15}$ $\quad \frac{1}{3} + \frac{1}{6}$ $\quad \frac{1}{11} + \frac{1}{2}$ $\quad \frac{1}{12} + \frac{1}{6}$

Add and reduce the sums to lowest terms.

$7\frac{1}{4} + 2\frac{7}{8}$ $\quad 9\frac{2}{5} + 4\frac{7}{10}$ $\quad 8\frac{2}{3} + 7\frac{3}{4}$ $\quad 1\frac{4}{9} + 6\frac{1}{12}$

Subtract and reduce to lowest terms.

1. $\frac{3}{4} - \frac{1}{4} =$ $\quad \frac{9}{12} - \frac{7}{12} =$ $\quad \frac{21}{24} - \frac{1}{24} =$

2. $\frac{3}{8} - \frac{1}{8} =$ $\quad \frac{11}{16} - \frac{7}{16} =$ $\quad \frac{8}{9} - \frac{1}{9} =$

3. $\frac{9}{32} - \frac{7}{32}$ $\quad \frac{11}{21} - \frac{4}{21}$ $\quad \frac{43}{64} - \frac{43}{64}$ $\quad \frac{5}{8} - \frac{3}{8}$ $\quad \frac{14}{16} - \frac{9}{16}$ $\quad \frac{13}{16} - \frac{7}{16}$

Subtract and reduce to lowest terms.

1. $\frac{3}{4} - \frac{1}{8}$ $\quad$ $\frac{4}{5} - \frac{4}{15}$ $\quad$ $\frac{9}{16} - \frac{3}{32}$ $\quad$ $\frac{3}{4} - \frac{2}{3}$ $\quad$ $\frac{2}{3} - \frac{1}{2}$ $\quad$ $\frac{1}{16} - \frac{1}{32}$

2. $\frac{3}{4} - \frac{9}{16}$ $\quad$ $\frac{2}{3} - \frac{1}{15}$ $\quad$ $\frac{3}{4} - \frac{3}{16}$ $\quad$ $\frac{4}{5} - \frac{1}{15}$ $\quad$ $\frac{9}{32} - \frac{3}{64}$ $\quad$ $\frac{1}{2} - \frac{1}{4}$

Subtract and reduce the differences to lowest terms.

1. $8\frac{1}{2} - 4\frac{1}{3}$ $\quad$ $5\frac{5}{8} - 2\frac{1}{4}$ $\quad$ $6\frac{7}{10} - 4\frac{2}{5}$ $\quad$ $7\frac{4}{7} - 5\frac{3}{7}$

2. $7\frac{1}{2} - 4\frac{1}{8}$ $\quad$ $5\frac{2}{3} - 3\frac{2}{7}$ $\quad$ $4\frac{7}{8} - 2\frac{2}{8}$ $\quad$ $8\frac{12}{15} - 1\frac{2}{5}$

Borrow one whole number in these mixed numbers.

1. $8\frac{1}{2} =$ $\quad$ $7\frac{2}{3} =$ $\quad$ $5\frac{4}{15} =$

2. $4\frac{1}{2} =$ $\quad$ $2\frac{9}{16} =$ $\quad$ $4\frac{3}{8} =$

Subtract and reduce the differences to lowest terms.

3. $4\frac{1}{3} - 2\frac{1}{2}$ $\quad$ $3\frac{1}{4} - 2\frac{3}{8}$ $\quad$ $6\frac{2}{5} - 4\frac{7}{10}$ $\quad$ $7\frac{3}{7} - 5\frac{4}{7}$

4. $6\frac{1}{8} - 2\frac{1}{2}$ $\quad$ $5\frac{2}{7} - 2\frac{2}{3}$ $\quad$ $4\frac{2}{9} - 1\frac{7}{16}$ $\quad$ $1\frac{3}{5} - \frac{13}{15}$

5. $16 - \frac{5}{7}$ $\quad$ $23 - \frac{7}{8}$ $\quad$ $14 - \frac{11}{16}$ $\quad$ $10 - \frac{4}{5}$

Student Auto-tutorial Journal

Name _____

Tutor/Instructor _____

Skill	Material		Module	Date	Completion
	Title	Publisher			

Appendix O

Supervisor Follow-up Questionnaire

TO: _____

The following person completed the Academic Skills Development class:

_____

Keeping her/him in mind, please answer the following questions:

		Yes	No
1.	Did quality of work improve?	___	___
2.	Has the person ever spoken to you about the classes or mentioned it to co-workers in your presence?	___	___
3.	Have you seen any evidence of improved self-image?	___	___
4.	Have you noticed any improvement in academics related to mathematics or communications needed for the job?	___	___

Please comment on any of the above:

_____

_____

_____

_____

_____

_____